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Worldwide Report

TELECOMMUNICATIONS POLICY, RESEARCH AND DEVELOPMENT

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WORLDWIDE REPORT

TELECOMMUNICATIONS POLICY, RESEARCH AND DEVELOPMENT

CONTENTS

LATIN AMERICA

TOP SECRET DEFENSE ROLE CONSIDERED FOR AUSSAT

Canberra THE AUSTRALIAN in English 18-19 Feb 84 p 3

[Article by Marsali MacKinnon]

[Text] The $300 million Aussat communications satellite could be used for
top-secret defence programs, a spokesman for the Department of Defence said
yesterday.

He said the department had been "following the Aussat satellite program with
great interest" for seven years.

The general manager of Aussat, Mr Graham Gosewinckel, said yesterday that rep-
resentatives from the Department of Defence had "expressed interest" in leas-
ing an Aussat transponder.

The department spokesman said the communications section had developed a
series of plans for military use of an Aussat transponder.

"But these are top secret. The department is constantly adding to the ways it
could use Aussat, as the technology becomes more advanced," he said.

"We hope that we may be able to take advantage of the satellite by the late
1980s."

But this depended on Defence having a budget which could afford Aussat. The
satellite's service is not cheap: it will cost $2.1 million to lease one of
its 22 12-watt transponders for a year, or $175,000 a month.

Promotion

The Departments of Aviation and Communications, acting for Telecom and the
ABC, also apparently want to use of the service.

Mr Gosewinckel is on a tour of capital cities to promote the Aussat satellite,
which will be launched from the US space shuttle in July next year, and gather
applications from potential customers. He said the response so far had been
"very good".

He has visited Sydney and Melbourne, and yesterday it was the turn of Canberra to hear about the Aussat "public awareness campaign."

He admitted, however, that the use of Aussat would be beyond the financial range of people in remote country areas for purposes such as School of the Air.

When Aussat was first mooted, predictions were made that it could revolution-ise the long-distance School of the Air and provide a service outback parents could afford.

Mr Gosewinckel said an earth station, which would have to be built to receive the satellite transmissions, could cost from $15,000 to $20,000.

"This cost clearly puts the satellite beyond the range of most individual out-back people," he said.

"It is clear the cost of providing earth stations will fall on the State edu-cation authorities--it's a lot of money," he said.

He said Aussat had been criticised for "giving people false expectations" of what it could mean for people in isolated areas.

The satellite will offer services to a wide range of customers, and discounts for multiple transponder use and for part-time lease.

The top-of-the-range service of one high-powered 30-watt transponder beam, covering the mainland, Tasmania and Paupa New Guinea, will cost $3.36 million a year.

Occasional use of a 12-watt transponder will cost $1000 an hour.

"We want to be a profitable, commercial organisation--we don't want to be a drag on the public purse," Mr Gosewinckel said.

He said Aussat would start to show a profit to its shareholder, the Govern-ment, "by about 1988".

Aussat has not yet disclosed the cost of using its main city earth stations, nor how much costs might increase.

The costs will not be finalised until the eight-week registration period for potential users is completed.

Mr Gosewinckel said the Government would use about 30 per cent of Aussat's capacity, and the media--primarily television stations--were expected to use a further 65 per cent.

But contrary to speculation, it had not been decided yet which commercial TV stations would use which service.

"I don't see any firm fixed contracts until August or September," he said. Aussat would begin signing contracts with customers "after mid-year".

Applications received before April 16 would be treated as if they had arrived on that date, and later applications would be treated "sequentially".

"After April 16, we will make the first trial allocation of the satellite and that's not going to be easy. We won't be making any grand announcements on what the allocation is."

CSO: 5500/4376

HAINAN BEGINS CONSTRUCTING MICROWAVE STATION

HK031141 Haikou Hainan Island Service in Mandarin 0330 GMT 3 Apr 84

[Text] According to our reporter, construction of the (Maanling) microwave station of the Hainan section of the (Yuexi) radio and television microwave line started at 0930 hours on 2 April. (Zhang Dingchao), member of the standing committee and director of the propaganda department of the Hainan Regional CPC Committee, extended, on behalf of the construction group of the regional party committee, warm congratulations to commanders and fighters of PLA units garrisoned on the island, technical personnel, cadres, and workers who participated in the construction commencement ceremony and cut the ribbon.

The (Maanling) microwave station will be the first station where the (Yuexi) radio and television microwave enters our region. It is also Hainan's central station. It will shoulder the task of receiving radio and television programs from Beijing and Guangzhou via (Xuwen) and transmitting them in three directions to Haikou, (Jinji Ling), and Lingao. In addition, it will broadcast local radio and television programs to various parts of the island.

After the project is completed and put into operation, the people of Hainan will be able to watch and hear on the same day radio and television programs from Beijing and Guangzhou as well as local programs. Hainan's 3-channel television stereo broadcast and television education will also be further developed.

The (Maanling) project was formerly scheduled to be completed in 3 years. However, encouraged by the Central Committee and the State Council's decision on accelerating Hainan's construction and development, and with the full cooperation of various quarters, the construction has started ahead of schedule and is planned to be completed in 1 year.

Yesterday, some 800 PLA men of the Hainan Military District (Nanhang) Units and the Haikou Marine Police participated in voluntary labor on the worksite. (Wu Shufen), adviser to the political department of the Hainan Military District; Li Xiu, director of the logistics department, and (Liang Shiyuan), director of the engineering department of the (Nanhang) PLA Units; (Liu Weidong), political commissar of the Haikou Marine Police; (Nan Lufeng), deputy director of the regional party committee propaganda department; (Zhang Tongqing), deputy director of the Hainan Construction Committee, and (Li Yongning), deputy magistrate of Qiongshan County also attended the construction commencement ceremony.

CSO: 5500/4182   4

BRIEFS

SHANDONG COMMUNICATIONS LINES--According to the recent Shandong Provincial Posts and Telecommunications Work Conference, in 1984 this province will step up the laying of long-distance communications electric cables between Jinan and Qingdao Cities, and increase some 250 long-distance telephone lines, 15,000 automatic telephones in cities and 100 telephone lines for agricultural purposes. In addition, all direct telephone lines will be opened between prefectures and counties in the province and new lines from Jinan to 32 counties will be added. It is expected that about 70 percent of villages and towns in the province will have telephones in 3 to 5 years. [Summary] [Jinan Shandong Provincial Service in Mandarin 2300 GMT 6 Mar 84 SK]

CSO: 5500/4181

MINISTRY OFFICIALS STRESS IMPROVEMENT OF COMMUNICATIONS FACILITIES

Ministry Meeting on Communications Quality

Sofia IMPULS in Bulgarian 6 Mar 84 pp 1, 2

|Unattributed report on a joint session of the Board of the Ministry of Communications and the Bureau of the Central Trade Union Committee for Communications Discussing Results of the State and Public Review of the Quality of Communications Services: "With a Specific Program, With Specific Deeds"|

|Text| On 1 March 1984, the Board of the Ministry of Communications together with the Bureau of the TsKPS |Central Trade Union Committee for Communications| reviewed the results of the state and social review of the quality of communications services. At the session the participants heard for discussion the following: a report on the results of the review; information on the participation of the trade union of communications workers in it; a report on the studies made by certain party, state, economic and social figures and subscribers of communications services; a report on the results of inspecting the technical state of the communications systems and the quality of services; information on the handling of complaints, alerts, proposals and requests from the citizens in 1983; how the program measures have been worked out for improving the quality of communications services up to 1985 and in the Ninth Five-Year Plan.

During the discussion it was unanimously recognized that all the practical, political and social work carried out by the collectives bore the imprint of the conclusions from the speech of Comrade Todor Zhivkov at the national conference in Varna, the tasks set for carrying out the measures of the Secretariat of the BCP Central Committee, the Bureau of the Council of Ministers and the Bureau of the TsSBPS |Central Council of Bulgarian Trade Unions| and chiefly the high criteria set by the leadership of the ministry in improving the quality of communications services.

Due to this, even during the review itself, significant practical work was carried out to improve the quality and broaden the range of services and this has born results even now on the eve of the National Party Conference.

Many of the participants in the session expressed their attitude toward the work done. It was pointed out that the time of delivering written correspondence in 1983 was accelerated with around 70 percent of the mail being delivered

on the day of mailing and on the first day after mailing with 64.9 percent in
1982. Delivered on the second day was 21 percent with 21.3 percent in 1982 and
on the third day, respectively, 7 percent and 7.9 percent in 1982. The postal
network has grown by 37 ptt [post, telegraph and telephone office], of which 11
are in towns and 26 in villages. In 1983, the number of telephones increased
in comparison with the level at the start of the five-year plan by 384,000
with 292,700 being home telephones. The telephone density has reached 18.54
percent with 16.88 percent at the start of the five-year plan. A major step
ahead in improving telephone services has been the possibility of automatically
dialing the capitals and major cities of 16 states in Europe. With the opening
up of the electronic telegraph office in Sofia, there has been a substantial
broadening of the range of states which telex subscribers can dial automatical-
ly. Results have also been achieved in the area of covering the nation with
radio and TV signals. With the completion of 50 new relays and primarily with
the redundancy of around 80 percent of the relays, during the review there was
a substantial improvement in the quality of the first TV program which daily
transmits an average of 10-11 hours. Over 50 percent of the relays have been
provided with redundancy for the second television program. Definite advances
have also been made by the labor collectives of the Telekomplekt ISO [Tele-
equipment Economic Trust].

It was also reported that a significant step had been taken to establish a
modern normative base for applying the economic approach. A draft has been
worked out and approved for amending and supplementing the regulation of the
economic mechanism under communications conditions, new directives governing
the setting, norming, planning and reporting of quality as well as coordinating
wages with this. All these normative documents create conditions for fully in-
stituting a system of quality control.

The minister Pando Vanchev made an extensive statement containing a profound
analysis of what had been achieved and concrete instructions for the forthcom-
ing work to improve the quality and level of communications services.

"This is not the first time that we have examined the quality question," he
said. "This question has not left the work of the leadership of the ministry
and the TsKPS since 1977. The leadership of the Ministry of Communications
and the Trade Union as a whole, the administrative and trade union leadership,
the party committee in the ministry have been working in this area long before
the establishing of quality as one of the main areas in the party's strategy.
But precisely this is the reason why now this question confronts us with even
greater responsibility as we must make even greater changes and include even
more substantial improvements in our work.

Minister Pando Vanchev took up in detail what the labor collectives and the
Ministry of Communications as a whole consider as the most important success
prior to the National Party Conference. In this regard he put in first place
the party and governmental decisions, the fulfillment of which will bring
Bulgarian communications to a qualitatively new level and will raise the his-
toric role in all its development. These include the 14th Directive of the
Bureau of the Council of Ministers of May 1983 and the decision of the Polit-
buro of the BCP Central Committee concerning the further development of radio
and television, as well as certain other documents related to providing

communications services on the highest modern level for the forthcoming UNESCO Session and the Winter Olympic Games in 1992 in our country.

"With what other important measures are we approaching the National Party Conference," the speaker continued. "We are approaching it with rich experience in the operation of the international telegraph station. The modernization will provide results immediately and this can be seen at present in the excellent quality, some 99.07 percent, as well as by the surveys made among its consumers. Another major advance has been the Crosspoint Station which we began operating in Plovdiv. Here the success is not only the high quality of the telephone services which it already provides but also the experience gained from the exceptional efforts which were taken both by the collective employed to operate the station as well as by the leadership of the ministry in overcoming the difficulties related to carrying out such a task."

As another important achievement which the labor collectives in communications will greet the National Party Conference with, Minister Pando Vanchev emphasized the expansion of the nation's telephone network and the further satisfying of the public and the state apparatus with telephone services. In pointing out that since the start of the Eighth Five-Year Plan up to the present 400,000 new telephones have been installed, and that in 1983 alone there were 140,000 (an increase which had not been achieved previously in the nation), he emphasized that at present precisely an increase in the number of telephones to the greatest degree will resolve the quality questions and increase the social effect from the development of the nation's telephone system.

In the statement by the ministry leader, serious attention was given to what had been achieved in the area of communications construction, in emphasizing that in 1983, 431 projects had been completed and put into operation but only 8 of these had a good quality. All the rest were excellent. He took up the development of scientific services and spoke about what had been achieved in the area of postal services.

"All of this," said Comrade Pando Vanchev, "would have been inconceivable to achieve without the full understanding shown for the communications problems by the Politburo and Party Central Committee. This would have been impossible without the correct instructions which we have received in order to carry out the party decisions. And most importantly, it would have been impossible without the personal support of Comrade Todor Zhivkov. Without his active involvement in the discussion and adoption of such important documents for the further development of communications, all of this would have been impossible."

In his speech Minister Pando Vanchev gave serious attention to the present state of communications services as well as to the readiness to successfully carry out future, exceptionally important tasks. He emphasized that the scientific groups have a leading role to play in all the work of making tangible changes in quality but unfortunately slowness and uncertainty are still apparent in this regard. In pointing to specific examples, the speaker emphasized the need to pay exceptionally serious attention in future work to the subjective factor. The leading principle must be the consistent application of an economic approach, the use of economic levers and influence by the use of wages.

Minister Pando Vanchev pointed to the state of communications services in Sofia as the central question which we must begin to immediately solve. He recalled that as the chief party, organizational, administrative and economic center the capital requires and makes it possible to realize the highest economic and social effect from improving the quality of communications services. He emphasized certain shortcomings in the approach to solving this question up to now and gave a number of practical recommendations for making a fundamental change in our future work.

After returning to the question of the high responsibility related to the forthcoming introduction of new technologies and equipment, he reminded us that in the future the quality of telephone services will depend largely upon the presently existing level. For this reason he drew serious attention to the necessity of improving the maintenance of the A-29 stations and establishing an organized system for their correct operation. In his speech, Minister Vanchev also took up the problems of the development of the central radio and loudspeaker system and drew attention to the need to quickly settle the questions related to the maintenance of the institutional telephone exchanges.

On all the examined questions the board of the ministry and the bureau of the TsKPS adopted the corresponding decisions.

Directorate Heads on Communications Improvements

Sofia IMPULS in Bulgarian 6 Mar 84 pp 1, 2

[Comments by the leaders of the three basic communications directorates and the scientific research institute: "With New Criteria and a New Approach"]

[Text] The concluded state and public review of quality provides rich material for a thorough analysis of the state of the communications sector for more fully satisfying the citizens with modern, high quality communications services. Even during the time of the review, however, a number of positive changes occurred in the postal, telegraph, telephone, radio and television services. This was only the first step to deepening the process of modernizing, reconstructing and upgrading the existing capacity and to instituting defect-free labor as the sole method of work in the sector's labor collectives. At present, this is a responsible task which must be carried out up to 1985 and during the years of the Ninth Five-Year Plan.

"What are the basic positive changes which have occurred since the holding of the state and public review of quality?" and "What are the development prospects in the period up to 1985 and 1990?"--these questions were asked by a representative of the editors of the leaders of certain directorates in the ministry and the NIIS [Scientific Research Institute for Communications] so that they might share their plans with the readers of IMPULS.

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Engr Milko Grigorov, chief specialist and temporary director for the operation and maintenance of telephone and telegraph systems:

To begin with, in spite of the high increase rate of telephone installation in Bulgaria, we still have not satisfied 564,000 requests for telephones, 86,000 of which are in Sofia. During the review, the collectives of the nation made a study which showed that around 55 percent of the citizens have a very good opinion of the quality of the telegraph, telephone and radio loudspeaker services. Around 42 percent responded good and 3 percent unsatisfactory. A careful analysis of the data from this study as well as control checks which we made allowed us to establish certain disproportions between the number of rural telephones and the number of long distance telephone links.

Due to the comprehensive nature of the measures which must be taken, under the leadership of the MIS, a national program will be worked out for reconstructing and modernizing the cable telephone networks in the nation up to the year 2000. In addition to this, the program envisages that by the end of the Ninth Five-Year Plan, the amortized ATTs [automatic telephone exchanges] of the A-29 type will be replaced by new ones. In the accelerated replacement of the worn out, unsuitable or extremely obsolete exchanges, preference will be given to those which are most heavily loaded.

In the plan up to 1985 and in the Ninth Five-Year Plan we intend to replace the obsolete and worn out machines in the telegraph network by electronic teletype machines, to put the AMTOG [abbreviation unknown] and VOA [abbreviation unknown] equipment under the monitoring of TELETEST equipment throughout the nation and to introduce TELETEST and USITES [abbreviation unknown] in all the ATTS with a capacity over 3,000 numbers.

Engr Dimitur Kirilov, director for operations and maintenance of the radio and TV systems:

The first basic conclusion from the completed state and public review is that the border areas are most poorly covered by the television and radio signals. On the basis of a questionnaire made among our subscribers analyses are presently being made for the coverage of individual conurbation systems by radio and TV programs.

The second basic conclusion is that a large portion of the subscribers do not have the necessary knowledge and information to set up the antennas for their receivers. It is essential to popularize the methods and requirements for utilizing this important element of the "transmission--receiving" cycle. The employed questionnaire method also showed us the criteria quality for the services on the part of the consumers as well as the need to study their opinions and recommendations in the future.

On the basis of the results of the review we have planned specific measures to improve the quality of reception for the radio and TV programs. Basic attention is to be paid to setting up a broad network of transmitters and relays in the border areas. A number of measures are aimed at modernizing the improving the existing capacity.

One of the major projects which we are building at the moment is the national Kopitoto Radio and TV Center. A portion of its facilities will go into operation in 1984 and its final completion is anticipated by the end of the five-year plan. The radio and TV station in Ruse is also under construction.

This year, we will put into operation around 60 television relays and begin installing the USW--FM stereophonic radio broadcasting network in the 100-108 megahertz band. By the end of the year, we anticipate that 91 percent of the public will receive the First Television Program, 80 percent will be capable of receiving the Second, and 95 percent the Horizon Program of Bulgarian Radio.

Soyadin Petkov, director for operations and maintenance of the postal system:

The results of the state and public quality review confirmed that the postal network corresponds to the needs of the public and conforms to the territorial and conurbation system of the nation. The number of new ptt stations is steadily growing. However, there still are conurbation systems in certain okrugs with an insufficiently developed network of postal communications. Regardless of this, the percentage of correspondence delivered on the day of its mailing and on the first day after this is within the limits of the planned norms and is close to that in the CEMA countries.

The review has shown that due to the organization established for handling and distributing the press, in 13 okrugs the dailies are delivered on the day of their publication. It also confirmed data on the delayed delivery of the dailies to certain rayons of Gabrovo, Kurdzhali, Smolyan and Yambol okrugs.

For reducing manual, heavy physical and unattractive labor we must build transport and processing systems in the exchange and sorting centers in Tolbukhin, Pleven, Smolyan, Sliven, Yambol, Vidin, Oreshets, Septemvri and Sofia Central as well as in the expediting offices of Press Dissemination and the ptt stations in Bratsigovo and Gorna Malina. By the end of 1985, we must also expand the network for the containerized sending of postal printed material in covering the exchange-sorting centers in Mezdra, Cherven Bryag, Turgovishte, Lovech, Sliven, Burgas, Kazanluk, Yambol and Smolyan. This will complete the first stage of the system for fully mechanizing the processing of postal parcels and the press.

During the Ninth Five-Year Plan, accelerated construction of the ptt stations will be continued, and in 1990 one station will serve an average of 2,901 persons and the time of delivering the mail and the daily press will be reduced. The network of stores and booths RP [abbreviation unknown] and philaty will be expanded, with their number by the end of the period increasing by 175 in comparison with 1983 and reaching 1,380.

Engr Ana Gotseva, director of the NIIS:

The state and public review for us has been carried out in two basic areas: the development of work in the institute itself and the quality of the communications services. In the NIIS, we plan to improve the planning and reporting processes by introducing electronic computers, the mass employment of automation for engineer work and the improving of supervision over developments and labor

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discipline. Together with the sectorial directorates in the Ministry of Communications we have prepared a "Directive for Determining and Norming the Quality of Communications Services." Simultaneously, the quality of services was assessed in 89 local networks in the nation and the effectiveness of telephone calls was determined in the rayon networks of Sofia, Ruse and Varna.

The obtained results have provided an opportunity to analyze the quality of telehphone communications and specific proposals were made for improving these. Also analyzed was the state of radio and television communications. On the eve of the National Party Conference a program will be ready for decisively improving the quality of communications services in Sofia.

An essential area in our activities in following years will be the introduction of microprocessor systems for central control over the network. The aim is to establish a single national center where the processing of statistical data on failures will contribute to the application of corrective methods in eliminating the failures.

Along with the introduction of modern stations and exchanges we must find a solution for raising the level of the existing equipment so that the two systems can work jointly. Our specialists will provide aid in putting the electronic stations into operation and in setting up the portable digital switching systems.

Even now we are at work on drawing up a general plan for the development of the long distance communications network up to the year 2000 based on the principle of the integrating of services. We have already developed a multiplexor which in 1986 will begin replacing the telegraph equipment.

The institute has developed a new television relay and a USW--FM transmitter. Our developments will be continued in the area of space communications. In postal communications we will accelerate the introduction of containerization and automation. The possibilities of introducing electronic mail are being discussed. Its first representatives are "Telefax" and Tetetext."

10272
CSO: 5500/3012

FUTURE OF LOCAL TELECOMMUNICATIONS INDUSTRY DISCUSSED

Hamilton THE ROYAL GAZETTE in English 8 Mar 84 p 17

[Text]

Is time running out for Bermuda's telecommunications and software industry ambitions? Mr. Eugene Saunders, newly-elected president of the Computer Society, thinks it could be. Here, he explains why.

Whatever else he is, Mr. Eugene Saunders is not a political animal.

The new society president readily admits he is nothing like as well connected-politically as his predecessor, the former Minister of Tourism and a one-time UBP Member of Parliament for Paget East, Mr. Shorty Trimingham.

And although the two share a fervent belief in the role of telecommunications and computers in the Bermuda of tomorrow, Mr. Saunders' strength lies not in who he knows, but in what he knows.

The 36-year-old Bermudian developed an interest in telecommunications at the age of five when a next-door neighbour and radio ham and showed him how to set up transmitting equipment. The rest was just a matter of time.

Mr. Saunders is now a radio ham himself. He is also a professional telecommunications engineer having spent most of the last 19 years with the Bermuda Telephone Company where he is currently assistant manager of new services marketing.

"My approach as society president is different in that I can take a broad view of technology and computers and see them not just in terms of their business applications, but also in terms of their technical use and capabilities," he said.

The technical slant could prove more than useful to the new president who intends to win increased Government support for the society's plans over the next 12 months.

Top of the list is the society's annual computer fair — a three-day event which, until this year, had been a product showcase for Bermuda-based computer firms.

But the 1984 fair, which closed last week at the Southampton Princess, was a first for the society and Bermuda. Organisers set out not only to attract local exhibitors but also to draw participation from overseas software houses — a move which reflected Government's aim to develop the Island as an offshore software centre.

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Mr. Saunders concedes that the half dozen overseas exhibitors at the fair barely justified its international label and says that the society's limited promotional expenditure of about $5,000 may have to be increased next time round.

"Certainly we may have to think about spending more on promotion for the 1985 fair and will probably make an earlier start on it than we did last year," he said. "But you have to remember we are doing this without financial assistance and that the society is a non-profit organisation. Whether we obtain financial support from Government depends on how much Government wants to commit to achieving its aim of turning Bermuda into a software centre."

Much also depends on the policy of the society which could face a difficult choice if it enlists Government financial help. Though not averse to Government sharing the fair's financial load, the society may think twice about losing control of what it regards as its biggest annual event.

Regardless of who funds the next fair, Mr. Saunders feels Government should devote more resources to developing a telecommunications and software industry sooner rather than later.

"What we are talking about here, is Bermuda's future," he said. "I feel we should be more like Singapore in this respect and become more aggressive in developing an industry of our own. This whole idea has been drifting along since it was first discussed in 1979 and still seems to be drifting along now. We really need to promote the potential im

portance of computers in Bermuda which is an issue some politicians do not fully appreciate."

Mr. Saunders says he is inclined to agree with computer expert, Dr. Seymour Papert — the keynote speaker at last week's fair who urged Bermuda to move quickly to realise its ambitions before the currently vacant "offshore niche" in the software industry is filled by another country.

"I think he was right," Mr. Saunders told Business Week. "Why shouldn't this business go to the Bahamas or Curacao or the Caymans? It is really up to us to act quickly and use the lead we have over these places in terms of infrastructure and especially our communications. I think we could move on this now if Government acted to protect confidentiality and privacy and came out with a positive ruling on private satellite earth stations and the legality of signals they receive. These issues are all connected and seriously affect Bermuda's ability to convince people that it really is committed to developing a software and telecommunications industry."

Commitment is also the society's aim, but with a different goal.

It has pledged to turn itself in to a recognised professional group and give its 233 members the kind of job status currently afforded nurses and accountants.

Said Mr. Saunders: "Our aim is to get the society registered as a professional body with Government and, subsequently, get closer links with the British Computer Society to which we are already affiliated."

PLANNING UNIT CLEARS WAY FOR TWO NEW RADIO STATIONS

Hamilton THE ROYAL GAZETTE in English 3 Feb 84 p 1

[Text] Planners have granted permiscion that could put two more radio stations on the air within a matter of months.

The Department of Planning has approved an application by the St. George's Broadcasting Company to erect an antenna tower and transmitter building on Ireland Island in Sandys Parish.

The general manager of Radio VSB, Mr Chris Lodge, yesterday said that the planning approval could mean the appearance of two new radio stations in a matter of months.

"We are delighted to hear that our permanent site has been approved," said Mr Lodge

"For the last 2-3/4 years, we have been on what we call a coat-hanger or long-line antenna which is some 340 yards long and strung between the two towers at Dockyard.

"The new antenna will mean that we will be heard in more parts of the Island. It will also mean that we can now open our other channels, VSB-2 and VSB-FM."

Mr Lodge said that the St. George's Broadcasting Company has already received licences for the two stations—one which will be AM and one which will be FM—and worked out programming for each.

He would not reveal the format of either station, but said neither will be a country music station. He added that VSB-1 would keep its country format.

He explained that all three stations would operate out of new studios being prepared in the station's present location on Reid Street.

The only conditions that the planners attached to the erection of the antenna were that it should be fitted with warning lights for aircraft flying nearby and that its security fence should be surrounded by a hedge within a year of completion.

CSO: 5500/7514

GOVERNMENT MAY BE 'FIRST' TO ADOPT COMPUTER EDUCATION PLAN

Hamilton THE ROYAL GAZETTE in English 13 Feb 84 pp 1, 3

[Text] Government is considering installing a new computer education system that could make Bermuda the high technology centre of the world.

Premier the Hon. John Swan and Minister of Industry and Technology, Dr. the Hon. John Stubbs, had talks with computer experts this weekend that seem likely to bring a new and revolutionary form of technological education to Bermuda classrooms next year.

Representatives of National Information Utilities Corporation were among top computer experts invited by Dr. Stubbs to attend and speak at the Computers in Education seminar held at the Bermudiana Hotel over the weekend.

Government will decide later this year whether to buy the NIU system which would put a computer terminal capable of receiving information from all over the world onto every classroom desk.

Dr Stubbs said yesterday that Government was likely to make a decision later this year and if, as seemed "almost logically inevitable," it decided to go ahead, the first school would be equipped early next year.

Chairman of NIU Mr Jack Taub said yesterday that it would be a brave and pioneering step for Government to take but that it would make Bermuda the first country in the world to take the system. New York City and State, Virginia and Maryland are all negotiating for contracts in the US.

But he said that if Government acted quickly, Bermuda would be the first entire country to take the system.

"It's rare that you find a country with such a good economic and political climate. Relatively inexpensively and in one fell swoop this would give it the leading edge in the world of technological education.

"I personally believe that Bermuda would become a technological tourist centre. People would come from all over the world to see the system operate and the impact on the children would be beyond what we can comprehend right now.

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"It will change education and thereby the world. Bermuda could be the educational and high technology showplace of the world."

Mr Taub explained that the basis of the NIU system is the computer terminal. Schools in the system would put a terminal on every student's and teacher's desk and a computer in each classroom. The terminals would cost about $100 each and the computers about $1,000 at today's prices. Each school would have one central computer, costing about $15,000, operating those in the classrooms.

He estimated that equipping the country's schools would cost between $500 and $700 per student but that would be a once only expense and the equipment would be guaranteed against obsolescence for 25 years.

Mr Taub said that data would be beamed via the Westar 4 satellite into the schools systems and thereby on to the students' desks.

It would give schools a virtually limitless store of information, he said.

The data or software, would be fed to the schools via the airwaves like radio signals. FM wavebands have extra spaces of sub-carriers that can carry information to anyone who tunes in. This is the principle behind background music transmitted by the Bermuda Broadcasting Company.

Dr. Stubbs explained: "The NIU Corporation has a system where information is disseminated in the same way that music is and for reaching multiple schools this is a very cheap way of doing it. One broadcast will reach several schools at once.

"All the schools need is a computer and terminals for each teacher and pupil. If we take the system we will be among the first. We are not committed to taking it but the logic of the system seems inescapable, it's almost a logical inevitability.

"As soon as it is available we would want to evaluate it and make some decision later this year. If we go ahead it would be with one school initially in early 1985. Eventually it would be installed in all schools, primary and secondary.

"The two technologies of computing and telecommunications are merging and the power of the merger exceeds what one expects from the simple addition of their two powers.

"It will provide the manipulation of information that will apply throughout our society for the enrichment of just about every human activity.

CSO: 5500/7514

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COUNTRY TO HAVE COMMUNICATIONS SATELLITE IN FEBRUARY 1985

Rio de Janeiro JORNAL DO BRASIL in Portuguese 12 Mar 84 p 16

[Text] If the telecommunications sector does not encounter new investment re-
strictions, Brazil will have its first domestic satellite--Brasilsat--in Feb-
ruary of next year. A few days ago, EMBRATEL [Brazilian Telecommunications
Company]--which has no doubt that the project will be completed--took delivery
from the construction firm responsible for the civil projects of part of the
facilities at the Guaratiba Ground Station, where the satellite's control and
operations center will be located. The main rooms (for transmitting and re-
ceiving) are ready for the sophisticated equipment that will manage Brasilsat's
missions.

The satellite's chief function will be to carry telecommunications services
(telephony, telex, and data communications) to every part of the country. For
the first time, remote locations such as towns in Amazonia's interior (23 per-
cent of the national territory) or mountainous regions will be able to receive
those services. Those are areas where it is very expensive to install micro-
wave antennas, and many of them have therefore remained isolated.

In addition, all of Brazil's television stations will have unrestricted access
to the satellite transmissions. This is not true today because traffic on
Intelsat (the U.S. satellite for telecommunications services, which it costs
$5 million annually to lease) is congested.

Earthquake Protection

Although Brazil does not have earthquakes, the three antennas for tracking the
satellite and correcting its orbit will be protected from earthquakes. PROMOM,
which is the firm building the antenna base according to specifications pro-
vided by Spar (the Canadian company that is manufacturing the satellite), had
to build the concrete foundation with 48 pillars sunk to a depth of 18 meters.
According to PROMOM's engineers, this provides "additional reinforcement."

Canadian George Burch, who is Spar's manager of the Brasilsat project, says it
may strike Brazilians as irrational to have the antenna protected from earth-
quakes, but he explains that there cannot be different specifications for a
project of this type, with each one adapted to conditions in the particular
country where it is installed. Burch says: "It is very expensive to produce

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several designs. When a multinational firm designs an automobile, it uses the same model in several countries--it could not design a separate one for each of them. And what makes it even better is that this antenna complies with an international code."

Engineer Jorge Rangel Palha, coordinator for installation of the ground station, explains that EMBRATEL chose Guaratiba for two reasons. One was that it already owned the land (99,000 square meters), which is next to EMBRATEL's Mobile Maritime Service. The other reason had to do with the geographical features of the site.

Guaratiba

The station consists of a complex of three-story buildings, the powerhouse with its infrastructure, and three antennas. One of the buildings will house the equipment and the receiving and transmitting rooms. The other contains a mini-hotel (four rooms with bath), a restaurant, a bank branch, and an auditorium. The civil projects, which are costing 730 million cruzeiros (at December prices), will be completed in June, and all the equipment will be installed by September, according to EMBRATEL.

The technical operation will be as follows: the main antenna (16.5 meters in diameter) is for communication. It receives the signals from the satellite and sends them to the receiving room. A Digital minicomputer (made in the United States) analyzes the data received from the satellite and gives instructions to the control room. It is in the latter room that signal traffic is organized, sending signals to every part of the country.

Active Life of 8 Years in Space

Brasilsat is actually two satellites: one that will always be operating and another for use as backup--it goes into operation only if the first satellite fails. Both have the shape of a cylinder, and they will spin in space like a top--the movement necessary for their stabilization. Each will be equipped with 24 radio channels, allowing 12,000 simultaneous telephone connections or the transmission of 24 television programs at once. The satellites rotate with the Earth once every 24 hours, meaning that Brasilsat is what is called a synchronous satellite.

The first Brasilsat will be launched in February, and the second will follow in August 1985. Both will be launched from the Kourou Space Center in French Guiana. The (French) Ariane rocket will take them into orbit, and they will remain there for 8 years, which is the expected lifetime of each. One of the Ariane rockets crashed during a launch in mid-1982, but EMBRATEL's technicians say that the technical problems have been solved and overcome. The satellites proper, as well as all the technical assistance for setting up the project, are being provided by Spar Aerospace of Canada. Several technicians from EMBRATEL and the Space Research Institute are now undergoing training in Canada.

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How It Works

Each Brasilsat measures 2.16 meters in diameter and 9.25 meters in height and weighs 1,140 kg. The Ariane rocket will place them in orbit over the Equator. That will be what is called the transfer orbit, and they will move from one orbit to the other under the propulsion provided by their own rockets. To remain in operation, each satellite has batteries that receive their energy from solar radiation. When the satellite is on the side opposite the sun--the region of Earth where it is night--the batteries operate with the energy they have stored from the sun.

The Brazilian ground communications system using satellites already has 21 ground stations in operation using leased channels such as those of Intelsat, and 17 of those stations are in Amazonia. There is also the TV-Sat owned by two television stations--Globo and Bandeirantes--with 40 stations. Before Brasilsat begins operating, the number of stations will be increased, and the stations known as transponders will also be used by the Armed Forces for administrative and military communications. A coded data transmission system is being set up to serve the military sector. Since the signal from Brasilsat will be a strong one, "piracy" (picking up the data using a direct-signal antenna) is possible, and this makes coding important.

Cost

There will also be a station to receive signals from the search-and-rescue satellite system that will be used to locate ships and aircraft in distress. That station has cost Brazil $1 million. The entire project carries a price tag of $210 million. For international services--providing the two satellites and including Spar's technical services--EMBRATEL will pay $112 million, while Arianespace charged $58 million for the launching, and insurance (through the Reinsurance Institute of Brazil) will cost $14 million.

Under the terms of the contract, Spar will also be paid an incentive bonus of $15 million if the satellites operate satisfactorily throughout their 8-year lifetime. According to EMBRATEL, Brazilian industry will receive orders worth the equivalent of $43 million in connection with ground facilities.

11798
CSO: 5500/2034

BRIEFS

TELEVISION RELAY STATIONS--The Ministry of Transport and Telecommunications has authorized the Television Corporation of the University of Chile to set up relay stations in Talca and Chillan. The stations will operate as channels 8 and 13 respectively. [Summary] [PY202358 Santiago EL MERCURIO in Spanish 9 Mar 84 p C-1 PY]

CSO: 5500/2035

NATIONAL RADIO TELEVISION EXPANSION PROJECTS DETAILED

BK241221 Dhaka Domestic Service in English 0110 GMT 24 Mar 84

[Excerpt] Radio Bangladesh and Bangladesh Television [BTV] have implemented a
number of projects during the past 2 years to enhance their transmitting capa-
bility and improve production facilities. Among the major projects are the
radio's high power shortwave transmitter complex at (Sadibpur) near Dhaka cost-
ing 39 crore taka and the national broadcasting house at Banglanagar with 10
modern studios costing 26 crore taka.

Other projects under execution by radio are three 10-kilowatt mediumwave trans-
mitters at Comilla, Rangamati and Thankurgaon at a cost 9 crore 67 lakh taka
and a new broadcasting house at Rangpur costing 4 crore taka.

During the past year, the radio has taken a number of measures to rationalize
use of its resources and (?in house), economy. Nearly 100 acres of land on
the outskirts of Khulna town costing about 6 crores taka has been returned to
the government since Khulna station of Radio Bangladesh now uses a new 100-
kilowatt mediumwave transmitter at (Nowapara) in Jessore instead of the old
10 kilowatt one at (Goalandi).

Another 20 acres of land at Tongi with an estimated value of 3 crore taka has
been given away by it for building the Islamic University. Other measures of
rationalization bring about savings worth several crores of taka.

During the past 2 years television has set up new transmitters at Cox's Bazar,
Rangamati, Noakhali and Satkhira at a cost of 6 crore 23 lakh taka to expand
range of its coverage and added new facilities at the central TV station in
Dhaka for 100 percent color production.

A most modern outdoor broadcasting van has also been added recently. With the
help of these facilities Bangladesh Television has now been producing over 70
percent of its programs at home. BTV has also been able to improve substantial-
ly its earnings from advertisements, licence fees and exports of programs. This
year the BTV is expected to earn over 6 crore taka as against its revenue budget
of 5 crore 88 lakh taka. The number of TV sets in the country is also increas-
ing rapidly. The present figure is over 260,000 including 30,000 color sets.

9459
CSO: 5500/7114

BRIEFS

SATELLITE PERFORMANCE SAID EXCELLENT--India's multipurpose satellite Insat-IB, now in orbit, is performing excellently. According to Indian Space Research Organization sources in Bangalore, the prototype model of the disaster warning system has been successfully tested. It is to be installed in selected coastal areas of the south Andhra Pradesh and northern Tamil Nadu. A scheme for TV service availability to jawans [sodiers] in forward areas using reception of Insat-I TV transmissions is under development. The sources said the satellite is expected to outlive its 7-year life at least a year in view of the comfortable onboard fuel position. [Text] [BK251303 Delhi Domestic Service in English 1230 GMT 25 Mar 84]

WORK ON INSAT-2--Bangalore, February 13 (UNI): Preliminary work on India's second generation operational satellite--INSAT II (India National Satellite system was begun, according to Indian Space Research Organisation (ISRO) sources here. The first INSAT II test and demonstration spacecraft was expected to be launched in late 1988 or early 1989. The INSAT co-ordination committee has already begun discussions with agencies participating in the INSAT system, the All-India Radio, Doordarshan, the Posts and Telegraphs and Indian meterological Department. The programme of the INSAT-II test satellite would be completed by the middle of this year. Currently the department of space is involved in implementation of first-generation operational satellite providing sound communication facility, wide TV and radio network and useful meterological data. The last spacecraft of the first generation INSAT system INSAT 1C would be launched in June 1986. The fabrication of INSAT 1C has already begun and is expected to be completed by early 1986. INSAT 1C is functionally identical to INSAT 1A and INSAT 1B, though it incorporates a few additional changes in terms of hardware and detailed design. [Text] [Bombay THE TIMES OF INDIA in English 14 Feb 84 p 21]

CSO: 5500/7107

CONTINENT-WIDE SATELLITE TELECOM NETWORK PLANNED

London AFRICA NEW in English Feb 84 pp 36-37]

[Article by Ian Harper]

[Text]

A billion-dollar plan to provide Africa with a continent-wide satellite telecommunications network by 1990 could become a reality.

This is the conclusion of a study handed to UAPT — the African Post and Telecommunications Union — last November, details of which have been revealed to *Africa Now*.

The study, dealing with the "Afsat" project, has been prepared by Eurospace, the influential Organisation of the European Space Industry, which is the mouthpiece for 80 major industrial companies, banks and operators from 13 Western European countries.

The Afsat concept, according to Eurospace secretary-general Yves Demerliac, "is based on a triangular arrangement involving UAPT in the role of African customer, the European Development Fund of the EEC providing the finance and the suppliers." To date, says Demerliac, Eurospace and its group of consultants (the European Space Agency, Detecon, General Technology Systems,

Satel-Conseil, Safritec and Telespazio) have acted as study suppliers. But once the studies are completed members of the space industry will take over to supply hardware and services.

Initially the study was confined to the 12 French-speaking countries which make up UAPT, but for added credibility its scope was quickly expanded to include English-speaking countries. This led to the setting up of an *ad hoc* Afsat committee which now has 21 participants, including Kenya, Nigeria, Cameroon and Zaire.

With the exception of links provided by the International Telecommunications Satellite Organisation, Intelsat, and submarine cables between certain African capitals and between them and other continents, existing communications in Africa are mediocre.

Efforts have been made to implement the Pan African Telecommunications (Panaftel) network. This would create a system of microwave links to provide communications between the countries as well as create a communications "axis"

inside each of them. But it still remains almost impossible for one African capital to dial another except through Paris or London.

Inside the various countries, there are few "direct exchange lines," or DELs. Nigeria for instance, has seven DELs for 10,000 inhabitants, Senegal three for 1,000 and Zambia seven for 1,000. What is more, these figures are misleading, since 80% of the telephone sets are in the capitals and larger cities, with almost none in the rural areas where 80 to 90% of the population actually live.

As for television, only the capitals have a service. Radio coverage is better but still needs considerable improvement.

When asked exactly what the Afsat

project would do for Africa, Demerliac was realistic. "Goals sized to current European standards — say one DEL for every three to five inhabitants and three TV channels covering each country — would be too ambitious." More reasonable, he said, would be a single satellite providing about 12,000 phone circuits continent-wide and six TV channels for countries south of the Sahara.

The satellite system itself would comprise a high-powered craft (similar to the "Arabsat-class" vehicle currently being built for the Arab League by France's Aerospatiale) together with an in-orbit back-up and a ground spare.

Such a satellite would allow for smaller and therefore less expensive ground terminals. Four types of terminal are envisaged, ranging from large 11-metre "Class 1" stations located in the capitals, to small three-metre "Class 3Bs" for use in villages and business premises which will be able to receive television.

The smaller stations would be entirely solid-state and use easily replaceable modular electronic components, so easing operation and maintenance problems. Electrical requirements, a major problem in rural Africa, could be met by self-contained solar power units already used in several Third World countries.

Over the 10-year lifetime of the proposed Afsat satellite, total investment for the space segment would be about $200m, with about $600 to $800m for the entire continent-wide ground segment.

This means that for a "reference country" — one defined by Demerliac as being 300,000 sq. km, having 10m inhabitants by 1990 and including one master, 29 interurban and 90 rural satellite terminals — the cost over 10 years would be about $28m including operating costs, or about 0.4% of the country's projected GNP.

The figures look good, but how do they compare with the alternatives? For the next 50 years, extensive terrestrial communications links are out of the question — not only because of the enormous cost, but also because of the severe shortage of skilled operation and maintenance personnel.

The only alternative is greater use of Intelsat. All available figures, Demerliac says, show this would be considerably more costly. Moreover, a big question mark exists over whether Intelsat would have sufficient capacity for such a massive mission.

But even so, a billion dollars is big money. This is where the European Development Fund (EDF) fits in. Largely because of the benefits likely to accrue to the European high-technology industries, the EDF has tentatively agreed to foot the $200m bill for the spacecraft. Eurospace has also approached the various bilateral aid agencies and other European national financial institutions about privileged, low-interest, long-term loans.

The rest of the funding, Demerliac says, could come in a slightly more novel way. The assumption here is that Africans are not the only people with a need for good communications in Africa. Foreign companies stand to benefit considerably and Eurospace is investigating the possibility of such commercial participation. pation.

According to Demerliac, a two-tier organisation would allow for commercial participation while leaving control firmly in the hands of the relevant African governments. All that remains now apparently is a detailed study for the actual implementation of the system. The EDF has agreed to finance this, Demerliac says, provided that "the application for funding is made by a credible African partner comprising English and French speaking countries, i.e. wider than UAPT." In January, an agreement of intent to start this final study was opened for signing by interested countries ●

BRIEFS

DIGITAL PABX--The SWA Department of Posts and Telecommunications has bought a computerised digital PABX from Siemens. The installation will allow the department to use telephones, terminals, word processors and other peripheral equipment to form an integrated communications system. [Text] [Johannesburg RAND DAILY MAIL BUSINESS DAY in English 24 Feb 84 p 12]

CSO: 5500/49

SALES OF COMPUTER-AIDED DESIGN SYSTEMS TO INCREASE

Johannesburg SUNDAY TIMES in English 25 Mar 84 p 10

[Text]

SOUTH AFRICA'S engineering industries are expected to move steadily into computerisation. Sales of computer-aided design (CAD) systems should soar well beyond R30-million this year.

With economic conditions set to improve in the latter half of the year, suppliers of CAD and computer-aided manufacturing (CAM) systems look to an expanding market.

The general manager, graphic systems, of Sandton-based CAD-CAM supplier Intamarket, Robert Makinson, sees potential for expansion into the mechanical engineering sector which constitutes about 20% of the market.

Recession

CAD suppliers in South Africa have sold about R70-million of equipment since 1980, but in 1983 sales were about R30-million. Sales this year can be expected to increase substantially.

Significant, says Mr Makinson, is the fact that CAD systems have been supplied to several South African universities, indicating a commitment to the future.

Intamarket has supplied systems to the faculty of electrical engineering at the University of Natal and the faculty of mechanical engineering at the University of Potchefstroom. The University of Pretoria operates one of the engineering analysis software programme packages.

Teeth

"This means that future South African engineers are cutting their teeth on CAD systems. The implication is an expanding market for CADs in this country," he says.

In the past five years Intamarket has achieved a turnover of R15-million in CAD and CAM systems supplied by the three sections of Gerber Incorporated Gerber Scientific Instruments (GSI), Gerber Garment Technology (GGT) and Gerber Systems Technology (GST).

CSO: 5500/55

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BRIEFS

FRANCO-PORTUGUESE TELEPHONE CABLE AGREEMENT--France and Portugal have signed a draft treaty for the construction of an underwater optic-fiber telephone cable between the two countries that will be set up in 1987. This treaty, ratified by Louis Mexandeau, French PTT [Posts and Telecommunications] minister, during a trip to Portugal, envisages a 1,300-kilometer link with a capacity of 8,000 to 12,000 telephone lines. It will be possible to connect this cable, the cost of which is estimated at between 300 and 400 million francs, with the future underwater optic-fiber cable between France, Great Britain and the United States. Links are also envisaged with South America and Africa. This operation could be carried out, among others, by Submarcom (CGE [expansion unknown] group), which is taking part in the construction of the transatlantic cable and which has already provided an initial cable between France and Portugal. [Text] [Paris LES ECHOS in French 6 Feb 84 p 6] 9434

IMAGERY RECEPTION STATION INAUGURATED--The first Space Image Reception Station (SRIS) introduced in France was inaugurated at Issus-Aussaguel (Haute-Garonne) near Toulouse. Constructed by the European Propellant Company (SEP) for the National Space Studies Center (CNES), this station is intended to receive and process images recorded by the Earth observation satellites "SPOT-1" for France, whose launching is forecast for the spring of 1984, and "LANDSAT D," which the United States should put into orbit in the next few months. The conversion of data will be carried out by the Space Image Rectification Center (CRIS) installed in the Toulouse CNES, the marketing of the images being handled by the Spot-Image Company. CNES and the Foreign Network Telecommunications Administration (DTRE) will provide for the development of the SRIS, while the National Geographic Institute (IGN) will participate in that of the CRIS. [Text] [Paris LES ECHOS in French 6 Feb 84 p 4] 9434

AEG-TELEFUNKEN, THOMSON AGREEMENT--Negotiations have been resumed by Thomson and AEG-Telefunken to develop cooperation between the two companies, announced an official source in Frankfurt. Having acquired 75 percent of the German audiovisual company following failure of the Grundig deal, Thomson would pick up the 25 percent of Telefunken which it still needs to become 100 percent owner. As for AEG, the electrical equipment manufacturer could become minority shareholder in the recently formed (see LES ECHOS, 15 February)

Thomson French consumer products company. Such an agreement could be reached
by the end of the week. This theory, formulated by financial circles accross
the Rhine, is not at all unrealistic. Although not originally planned,
acquisition of the remaining 25 percent in Telefunken would allow Thomson to
make the company a total subsidiary and then issue consolidated accounts. A
clever twist that could be financially interesting at a time when in
everyone's opinion Thomson consumer products is quite likely to end up with a
deficit in 1983. At the same time, Thomson would not have to disburse any
money as a result of AEG's cross-deal. Moreover, it would provide the
nationalized company with a new financial input which would later enable it to
more readily increase its capital. The new structure recently adopted by
Thomson, with a Thomson SA holding company as gravitational center for five
large companies corresponding to the group's five major specialties, has been
conceived to facilitate the introduction of outside capital of all kinds.
[Text] [Paris LES ECHOS in French 7 Mar 84 p 8] 11,023

CSO: 5500/2619

STUDY ON ISDN, FIBER OPTIC NETWORK, SHOWS MORE MONEY NEEDED

Study Summarized

Munich COMPUTERWOCHE in German 20 Jan 84 p 4

[Article: "Scientific Control Systems Study of Future Postal Network Expansion Strategy: More Funds Needed for ISDN and Glass Fiber"]

[Text] Bonn (cmd)--For rapid wide-area employment of the ISDN [Integrated Services Digital Network] commencing in 1985/1986 additional funds amounting to 2 billion marks are required.

This was the figure mentioned by Franz Arnold, member of the management staff of the Scientific Control Systems (SCS), when addressing the press in Bonn. In presenting a study of the "future development of the public communications network in the FRG and its effects upon the users" the former division head in the Postal Ministry expressed the further opinion that also in optical communications technology there is a need for substantial long-term investments independent of immediate demand but that most of all what is required is a "national effort." Otherwise the FRG would also risk the same backwardness in information technology which it has already exhibited in data processing and in microelectronics.

Arnold cited France and Japan as examples of the intensive activities abroad. Thus, according to plans of the Japanese Postal Administration in the next 15 years a total of 230 billion marks will be made available for glass fiber and ISDN. Even if the German postal system were to concentrate on these two areas alone it would still not be able to put forth comparable future-oriented investments out of its own funds.

With reference to today's specialized networks like HfD, Datex-L and Datex-P the postal expert pleaded for the development, in contrast to these, of a strictly need-oriented system. For, in fact, there exists the danger that these networks at the very moment of being put into operation are already technologically obsolete. Moreover, he said, these networks are no longer able to cover their costs since they would be absorbed into the ISDN.

In a "critical review" of the SCS study the Postal Ministry emphasized that practically it is not possible to meet the demand that glass fiber be

developed in complete independence of demand. He declared that such a development strategy independent of long-term predictable demand would be associated with extraordinary risks.

He declared that nevertheless Postal Minister Schwarz-Schilling has assigned "highest priority" to digitalizing and expanding the ISDN network. He asserted that a still greater acceleration of the process would not be possible since the development and manufacturing capacities of industry required for this are already being fully utilized.

Interview With Telecommunications Expert

Munich COMPUTERWOCHE in German 27 Jan 84 pp 20-22

[Interview with Dr-Eng Franz Arnold,* member of the management staff of SCS and chief for telecommunications, by Helga Biesel and Claudia Marwede-Dengg: "Glass Fiber Must Be Raised to the Status of a National Program"]

[Excerpts] [Question] Mr Arnold, the year 1984 is placing heavy emphasis upon medium and long-term planning of information and communications activities of private enterprises. The 64-K model network is in existence; so that means there are now new standards. What will be the effects of this model network of a future ISDN upon the user, upon the manufacturers and especially upon the development of terminal equipment?

[Answer] First, one would have to ask, what can I do with the 64 Kbit per second? In order to be able to make use of that—and here we are also including the subscriber extensions—it will be necessary to develop terminal equipment in the next 2 years in order to permit replacement or expansion of the large local extensions, starting in 1985/1986. The public digital ISDN network, the ISDN subscriber extensions and other ISDN terminal equipment must be developed timewise in parallel. This is a challenge to the manufacturers—and moreover it is also the only true justification for the 64-Kbit model network which the postal service adopted as a precursor of ISDN in 1981. For terminal equipment is not going to be developed as long as the associated networks have not been clearly decided upon and planned. This is now the case for the 64-Kbit-per-second system—and in fact this is planned for the public domain with the model network even though this is relatively expensive and in the private domain with the digital subscriber extension facilities. I am talking about now and not the future. Naturally, that means a gigantic changeover: How many office communications devices are there as compared with the number of telephones?

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* Dr-Eng Franz Arnold, in 1941, studied at the Technical University of Munich, graduation at the Technical Advanced School of Aachen. From 1966 to 1982 with the German federal postal service, last position there being division manager for communications services. In October 1982, in the course of the "Bonn turnabout," he went into temporary retirement from the position of ministerial director. At present he is with Scientific Control Systems, Inc.

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[Question] With the international agreement upon the 64-Kbit channel doesn't this mean that the manufacturers' designs may differ in small details but that the basic functions must be the same?

[Answer] That is clearly so.

[Question] So this communications technical know-how is a matter of survival for the computer industry?

[Answer] Yes.

[Question] Now, the applications of this equipment are certainly also determined by the charges: networks and terminal equipment are certainly not going to be used if the charges are not favorable. What will be the direction of developments here? Will the postal service network charges approximate those of the telephone service or will there be more or less large differences in the future?

[Answer] Well, let us first consider the special networks such as Datex-L, Teletex, Datex-P or HfD [Main Switchboard for Direct Telephone Communications] and copper coax distributing networks. Here, in my view, there are differing developments and there is a fear on the part of users that the postal service will be more sharply cost-oriented. The future appearance of the special networks is as a matter of fact no longer determined by the ISDN; here, the postal service must now work toward cost-acceptable charges. Since only a minority of the special networks cover their costs--actually none of them do except for the telephone network--this implies first of all on a flat rate basis that all the networks will have to become more expensive. This means that HfD or fixed-circuit lines become more expensive through charging on the basis of volume. Here, in fact, the postal service has announced its "curves" and for the heavy users it will in any case be very much more expensive. And I consider this to be right because it is economically wrong for fixed-circuit lines over hundreds of kilometers to be employed as virtual lines by only one user and stand idle for the remaining time.

Second point: Datex-P must become more expensive. Datex-P is at a level of cost covering which is unacceptable--certainly far below 50 percent. Also, the coaxial networks were not cost-covering at the previous rates and neither will they be cost-covering under the new rates.

[Question] They will surely not be attractive to the users either, because they are relatively high.

[Answer] The coax charges are also wrong structurally; this has to be considered, too. And so one can absolutely no longer talk about cost covering. To be sure, they are now very high but when the time comes when the networks have been built and there are no connecting services available these high charges will produce nothing.

The single exception in this development of the special networks would probably be Datex-L and this would not be because the situation would not be the

same but simply because Datex-L and ISDN are actually no longer different
from one another with respect to data and text transmission. If you look at
the 64-K model network then that does appear to be a hybrid: it runs through
the communications stations of the IDN [Integrated Digital Network] and so
the time required to set up communications links are approximately the same;
for ISDN they'll be a little longer, at the most 2 seconds because the tele-
phone network has more stages of hierarchy; there are, to be sure, only 17 or
18 data exchange stations but about 3,600 telephone exchanges. Datex-L ap-
plications will compete with all those new communications over communications
lines. The traffic charges of the model network already amount today to just
2.6 times those of the analogous channel and are already cheaper than those
of the 9600-Datex-L network. In my study I have written that the costs of
introducing ISDN should not be higher by more than a factor of 1.2 as com-
pared with the most expensive rates for the analogous telephone channel.
That would mean that a 64-Kbit channel in the ISDN should, in the beginning,
cost no more than a single rate unit--23 pfennigs--for 9 to 10 seconds. Na-
turally, I can now easily ask for that; when I was still part of the postal
service I would not have expressed myself so concretely.

So that means that the ISDN speed at 64 Kbits per second will be substantially
cheaper than today's Datex-L but they involve exactly the same forms of ap-
plication. As for the rest, at the outset there will probably be a network
transition from ISDN to Datex-L. At the very latest by 1986 the first tests
for that sort of thing would have to be carried out. What was done between
Telex and Teletex is absolutely vital for ISDN and the like.

That means that Datex-L will probably be forced to become cheaper. One could
expect for 1984 a rate reduction of 20 percent. But whether that will really
take place is another matter.

[Question] But it would be desirable and also realizable?

[Answer] It would be realizable. In other words, if I were in the postal
service I would make Datex-P more expensive and Datex-L cheaper--and also I
would explain to the people why.

In the case of the model network the tendency is correct: the traffic
charges will be substantially cheaper at the speed of 64 Kbits per second for
text and data transmission than in the case of today's data networks. It is
clear that the charges of the model network and especially the base charges
cannot be representative of ISDN.

[Question] Then will there be special data transmission charges in the ISDN?

[Answer] No. That is one of the most important points. Admittedly there
have been studies in this direction but--I have written about this also in my
study--that would be a ridiculous thing to do. Integrated networks do not
make sense at all unless all services build upon them and not only techno-
logically but also in terms of their use. The user should certainly profit
by technological progress. That is especially important for business commu-
nication; for private communication which I expect will for many years be

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still preponderantly in terms of speech I believe that technological progress
will not lead to a cheapening but rather to a cost increase. In any case,
the postal service tendency—since 1975 the telephone charges have only drop-
ped—can really not be maintained in the innovative shift of the postal ser-
vice toward ISDN. This means concretely that the traffic rates of the ISDN
should be 1.2 times higher and the installation charge should be 3 to 5 times
that of today's basic telephone charge, in other words 81 to 135 marks
monthly simply in order to make ISDN as attractive as possible and to estab-
lish the changeover as rapidly as possible. As a result of these rates there
would develop a trend away from the data networks and the HfD in the direc-
tion of the ISDN.

[Question] What does that mean for existing data networks?

[Answer] I don't think that the postal service, for example, will any further
expand today's Datex-P network when the capacity bottlenecks have been elimi-
nated but I think that in 1985 the postal service must invite new bids for an
entirely new Datex-P system, a genuine second-generation system.

[Question] An entirely new Datex-P?

[Answer] No, simply a second-generation technology which will be first of
all better in terms of software and which is designed for the year 1995.
Really, we must recognize that we have now based the monitor-screen-text com-
puter link on Datex-P and that this can collapse if the computer link actu-
ally intensifies as much as people now expect it to.

[Question] This technological development certainly cannot be realized with-
out appropriate financing. If you stop to consider what the German federal
postal service wants to spend for broad-band cabling then one must ask how
all this can really be accomplished at once? Isn't it possible that under
certain circumstances the commercial communications—simply because of the
financial situation—will have to suffer from this and priorities will not be
assigned in the way one would like them to be?

[Answer] That's really my main worry and at the same time it is a reason for
my activities—which are not at all of a political nature. We know that the
German federal postal service must already secure 4 billion marks in the
money market. If we really want to introduce ISDN as rapidly as possible
this will mean a preliminary replacement of exchange stations in order to ac-
quire as quickly as possible at least one ISDN local exchange per local net-
work; 70 percent of the exchanges in the telephone network are at least 10
years old and this technologically considered is an age which is very unsat-
isfactory. But the postal service was unable to do anything about this situ-
ation because in the last 10 years the demand was very high. It is a fact
that the postal service has three investment-intensive domains which it alone
can be essentially responsible for, possibly with the support of the minis-
tries of research and industry or even perhaps of the Defense Ministry:
namely, the domains of ISDN, glass fiber and satellites. The satellite con-
tract has now finally been assigned and already costs roughly more than 1 bil-
lion. I consider that to be the smallest figure; over a 5-year period that

will be 200 million marks per year and that is realizable. In the case of ISDN quite different figures must be discussed. If one allows for preliminary replacement of exchanges in the interest of covering a large area as quickly as possible then one must supply just for this alone at least 1.5 billion additional.

[Question] Over what period of time?

[Answer] Annually, starting in 1986, because before that there can't be any delivery. But the goal should be 1.5 billion in the next 15 years and this not for normal replacement and expansion investments in communications technology (the amount for this would be about 1.3 billion) but an additional 1.5 billion marks for ISDN equipment technology.

[Question] So that would be about 3 billion annually for public communications technology?

[Answer] Yes, for public communications technology if one includes the cost of equipping subscriber connections. If, today, it is objected that the real heart of the matter lies in the glass fiber network this is misleading. Today it is not recognized by the public but ISDN is also the "precondition" for glass fiber networks. Without ISDN it is also impossible to have an integrated glass fiber network. In fact, ISDN control has already been provided for broad-band networks and without digital communications technology a glass fiber network makes no sense.

And besides, when one knows that the Japanese who only 3 years ago were well behind us in the use of glass fibers in a local network have today declared glass fiber to be a target of first rank and when one realizes that the Japanese Communications Administration intends to invest 230 billion marks within 15 years for integrated networks then this is something to think about. Something adequate must be found here in the FRG.

We just have to get away from this simple business of seeing everything politically black and white or to state it better, black and red, which is an attitude which distorts the essentials. Here it can only be said that we must construct glass fiber networks and make 3 billion marks a year available. Among the business firms which have actually done a great deal in the field of glass fiber and which can now express their opinions only with caution (and this is quite understandable) people are saying that if in the next 2 years there is no positive commitment to such-and-such an amount nationally then we won't be able to hold on to our development staffs. And then the same thing will happen in this new key technology as happened in electronic data processing.

[Question] What exactly will happen if there is not any such financing guarantee for the federal postal service?

[Answer] Then the following would happen (for the moment I am forgetting the fibers): we would not be able to have the components and the innovative know-how in Germany; in any case the German manufacturers would not be able

to have them simply because they would not be able to hold on to the staffs who would be exported to countries like France or England who are quite purposefully supporting their market. That means that for us there is no comparable "home market."

[Question] But that would be a prerequisite for the competitive competence of our strongly export-oriented telecommunications industry which at the present time is certainly still very strong.

[Answer] Yes, without a home market we wouldn't have that anymore either. With regard to the question of the use of glass fiber not so much importance attaches to the question whether today the postal service is making very much investment there but rather there must be a degree of "certainty" in business firms that the postal service in about 2 years will really support the use of glass fiber in the local network on a basis which is not just demand-oriented--instead of dealing hesitantly with glass fiber just on account of the public's false notion that it competes with the coaxial cable. This lack of certainty exists today in industry--and not only in large-scale industry.

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INDUSTRY DEVELOPMENT UNDER NINTH ECONOMIC PLAN

Paris TELECOMMUNICATIONS in French Jan 84 pp 37-41

[Article]

[Excerpt] The First Ninth-Plan Law

The first Ninth-Plan law was promulgated on 13 July 1983 and was based on the observation that our country is in a state of economic, social and cultural crisis and that our society is undergoing a profound mutation. We must conquer a new development by playing the game under new rules defined by reforms such as decentralization, the extension of the public industrial and banking sector, workers' new rights, and planning. Our main objectives must be to establish France's authority in the world (public aid to development will have to be increased) to tackle the employment problem through a reduction and improved distribution of working hours, to ensure the future of the young, to reduce inequalities, especially with respect to income, to improve community services and to contribute to the balance of the territory. Decentralization, industrial modernization and mutation of the production apparatus, training, research, innovation, cultural revival, all these must be the weapons of this new conquest, two prerequisites of which are the restoration of foreign balances and rigor in the use of our resources.

The Second Ninth-Plan Law

It revolves around 12 priority execution programs (PEPs) which are detailed both in the program of action they cover and in the means allocated to them, especially in the budget. In addition, they are accompanied by a battery of indicators that should make it possible to check that they are executed correctly throughout the Ninth Plan. They will be financed by total budget allocations (current expenditures plus program authorizations) of close to 60 billion francs in 1984, and over 350 billion 1984 francs during the period 1984-1988.

The second law also includes a backlog of large quantified objectives for the years to come, such as the military planning law, cooperation for development, the research orientation and planning law, and the energy policy. Sectorial approaches deal with industry, agriculture, small trades and crafts, transportation, telecommunications and telebroadcasting, housing, social economy and services.

The procedure to draw operating contracts between the State and firms is presented. It stresses the fact that the firms' strategies and the State's general orientations must be consistent. As an example, let us quote the orientations adopted for firms in the communications sector:

"- developing communication infrastructures, especially cable networks;"

"- reinforcing the production potential for audiovisual programs and software;"

"- increasing research and its applications at the intersection of the information, audiovisual and telecommunications sectors."

Public interest must be safeguarded and operating contracts must also contribute to the national solidarity policy. A framework is provided for their execution and supervision.

In addition, emphasis shall be placed on the contribution of each firm to the restoration of our foreign trade balance, the research and development effort, the general employment and training policy, the strenghtening of the fabric of small and medium-size firms and industries, the energy policy and the economic cooperation policy with the Third World, etc. The personnel shall be mobilized around major objectives. The scope of the firms' management autonomy shall be redefined and their financial relations with the State clarified. Finally, a sustained investment effort shall be made and large reconversions may also take place.

The regions will each draw up their own regional plan and they, too, can contract with the State, either for operations that are explicitly included into the PEPs or, more generally, within the framework provided by the first Plan law (the regional operating contract then becomes one of the means of execution of the National Plan); or for operations of purely regional interest, and the compatibility of these operations with the National Plan will then be ascertained.

Operating contracts can thus contribute to the exercise of national and interregional solidarity, especially through the financing they bring into play.

The last, but not the least facet of the second Ninth-Plan law is that the execution of the Ninth Plan will receive careful attention. Two reports will be presented to Parliament at the spring and fall sessions, which will ensure concordance with the finance laws. The regions themselves will supervise their regional plans through their Regional Councils, with the support of the Economic and Social Council. An interministerial committee on the Plan PEPs will also ensure that the PEPs are implemented correctly, and the Interministerial Committee on National and Regional Development will supervise the execution of the State/regions operating contracts. All this will be done using the indicators contained in the text of the Plan laws.

The refinement of economic computation techniques, the improvement of public policies assessment, and the renovation of planning methods: these are all characteristic of the Ninth Plan and reflect the work done to prepare it.

Telecommunications Under the Ninth Plan

Before reviewing again in detail the objectives and means provided for Tele-
communications under the second Ninth-Plan law (sectorial approach, priority
execution programs), it should be interesting to outline the procedure lead-
ing to the determination of a development policy at the General Directorate
of Telecommunications [DGT].

Determination of a Development Policy

The determination of a development policy goes first through a "strategic"
stage, then through an "operational" stage.

The major parties involved in the preparation of the Plan each have their own
concerns (these may be closely related, but they are often divergent); a few
examples will shed light on the various strategic stakes involved.

At the Ministry in charge of the Plan, the development of telecommunications
is examined more particularly in the light of its economic, social and cul-
tural impact; in particular, it must contribute to the realization of the
major medium-range objectives defined by the government: employment, foreign
trade, decentralization, technological progress, etc.

As for the Ministry of Industry and Research, its concern is to make sure
that jobs are preserved in the industrial telecommunications sector, and to
promote the large industrial and research programs decided by the government
(e.g.: electronic sector, increasing the ratio of the national R&D expendi-
tures to the gross domestic product, etc.).

Because it wants to be in a position to preserve macro-economic balances at
all times, and to be free to implement an economic regulation policy, the
Ministry of Economy, Finance and Budget is reluctant to commit itself for
several years to certain policies, for instance a policy of having recourse
to medium-term financial markets, or a policy of periodic tariff increases.
In addition, in view of the limitation resulting from the size of the finan-
cial market and the desire of the ministry to achieve optimum resource alloca-
tion, the various public investment programs are compared and compete with
one another, which means that the order of priority of the requests to be
granted may vary as time goes by.

Finally, as it must respect public service principles, the DGT must at the
same time strive to balance its accounts, continue the expansion of the coun-
try's telephone network, and progressively introduce new products and ser-
vices (data communications, optical communications, satellites, etc.). To
finance the bulk of investments required and still make sure that tariff
increases do not exceed the overall price increase, the resources available
for self-financing must be complemented by having recourse to the financial
market (external financing).

Therefore, the various concerns of the several parties involved and the over-
all economic context yield a number of variables which affect the conditions
and potentialities of telecommunications development:

- economic environment variables: index reflecting the variations of the gross domestic product (by value and by volume), interest rates on loans, currency parities, etc.

- "telephone" environment variables: breakdown by subscriber categories (socio-professional categories and households/institutions), variations in household income distribution, indices reflecting subscribers' consumption variations, etc.

- "control" or strategic variables (i.e. the major variables on which our discussion of telecommunications development is based): net increase in the number of main lines, mean waiting time before connection, service quality indices, amounts invested (and, by inference, number of orders placed with the industry), tariff variations, recourse to the financial market, etc.

Considering that all these variables are related to one another to various degrees, the objective to be achieved will therefore be the formulation of development models meeting the dual condition of being consistent, on the one hand, and, on the other hand, of achieving a compromise as to the values of major variables, so as to satisfy the various parties. To quote a recent example, this was done in the case of the interministerial preparation of the Medium-Range Telecommunications Management Charter (1983-1986).

At "operational" level, the preparation of a development path can be reduced to a few successive stages:

- Study of the demand expressed and the ways to meet it, using the DGT's forecasting models for telephone connection requests and telephone consumption, which are used independently upstream (main-line production objectives).

- Determination of the material means (investments and personnel) required to achieve production objectives.

- Utilization of the means (provisional investment budgets, overall and by technologies, investments from financing companies).

- Projection of the DGT's annual financial accounts (operating results, capital operations account, balance sheet, financial analysis ratios), giving special attention to the budget financing required and the total gross borrowings from financial markets.

- If need be, revision of production objectives or of certain strategic decisions (investments, personnel, tariff variations, etc.), after comparing the results with certain political and economic constraints (industrial and research policy, job policy, restriction on borrowing from the financial market, tariff level, etc.).

To this effect, simultaneously with other evaluation and decision criteria, simulations are carried out at the DGT's Department of Programs and Financial Affairs, using a model of enterprise (MODESTE [expansion unknown]) that projects the interrelations of the main physical and financial quantities
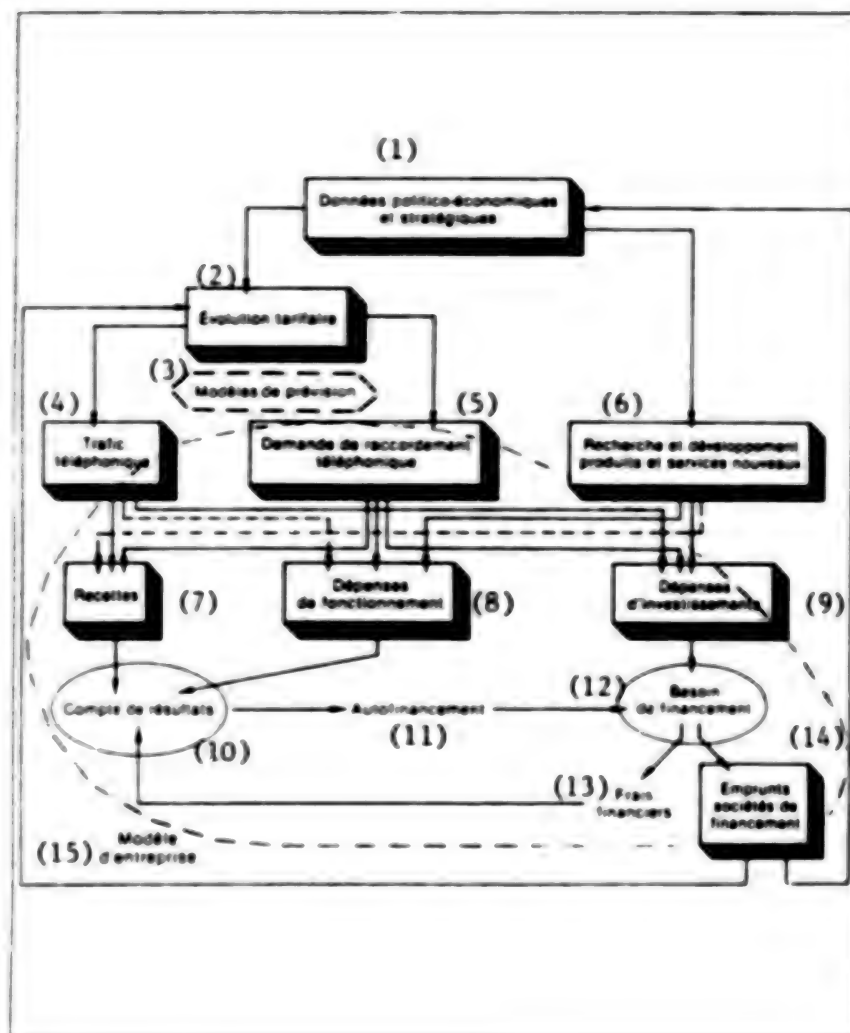
Figure 1.   Determination of a Development Policy at the DGT

Key:
1.   Political, economic and strategic data
2.   Tariff changes
3.   Forecasting model
4.   Telephone traffic
5.   Demand for telephone connections
6.   Research and development, new products and services
7.   Receipts
8.   Operating expenditures
9.   Investment expenditures
10.   Operating results
11.   Self-financing
12.   Financing requirements
13.   Financial costs
14.   Borrowings from financing companies
15.   Company model

involved in telecommunications and yields forecasts of the DGT's medium and long-range financial flow and results (Figure 1).

By analyzing several variants, it is possible to bring out the risks of appearance of medium and long-range evolution problems, especially financial problems, and to construct several development scenarios. The models (demand and consumption models, company model) also make it possible to test the sensitivity of a given variable or a central quantity to the variations of another variable, for instance the sensitivity of the need for financing to a one-point variation in the gross domestic product price, or to a one-centime variation in the basic fee tariff, etc. In this respect, Figure 2 shows projections of the self-financing rate and the indebtedness ratio corresponding to five different scenarios of expansion of the number of main lines, which were considered during the preparation of the Management Charter.

In any case, greater attention should be given to the amplitude and direction of the differences obtained between several curves than to the exact figures obtained with a given simulation, which should always be considered as relative (as they may change according to conditions, quality, the policy or the environment, etc.).

The strategy adopted for the Medium-Range 1983-1986 Management Charter (objectives, rules, ratios) is a compromise between:

- on the one hand, an adequate tariff decrease with respect to the overall price level, making it possible to expand the network ("the telephone for all") and also to improve the competitiveness of companies (the telephone as a "production tool");

- on the other hand, the preservation of a sound financial situation, so as to guarantee long-term development, in particular for the new networks and services, as well as the financing of research activities (see "The Medium-Range Management Charter of the DGT," in T MAGAZINE, April 1983).

A Sectorial Approach

The telecommunications and telebroadcasting sector is one of the "sectorial approaches" included in the second Ninth-Plan bill submitted to Parliament late in November 1983.

As far as telecommunications are concerned, the Medium-Range 1983-1986 Management Charter constitutes the reference basis for development, and the latter will materialize as the main figures given in the Charter are achieved by 1986:

- 24 million main telephone lines;
- 3 million videotex terminals;
- orders for 2 million cable network connecting outlets;
- 80 percent of telephone connection requests satisfied within 15 days;
- an average of 31.5 billion 1984 francs per year in scheduled investments for the period 1983-1986.
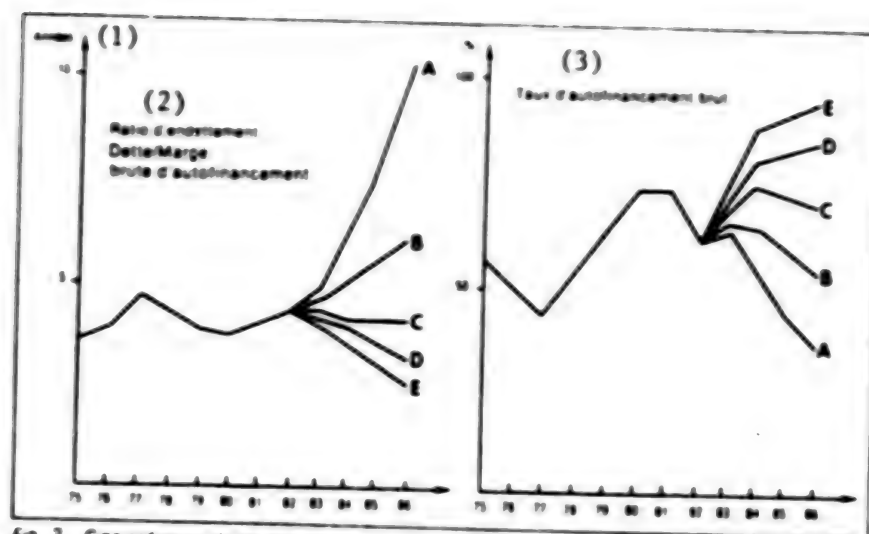
Figure 2. Five Development Scenarios

Key:
1. Years
2. Indebtedness ratio:
   Debt/Cash flow
3. Gross self-financing rate

As far as telebroadcasting activities are concerned, the law mentions, among other things, the start of direct broadcasting satellite operation, the extension of videographic services and the development of local cable networks. In addition, the law provides for an operating contract between the State and the French Telebroadcasting Company [TDF]. In particular, the contract should define the extent to which TDF will get involved in the new telebroadcasting activities. The Ministry of Posts and Telecommunications [PTT] will of course also take part in the preparation of the contract.

Priority Execution Programs

As already mentioned, the 12 PEPs, which should be financed irrespective of how conditions may change between now and 1988, form the "hard core" of the Ninth Plan.

The DGT was associated in particular to the preparation of PEPs No 3 and 4:

- PEP No 3: "To Encourage Research and Innovation"

To adapt the production apparatus to the new technologies, a considerable effort will have to be made to develop research and innovation. This effort will materialize into three sub-programs: to increase the research and development effort and encourage innovation in companies; to promote scientific and technical culture and information; to encourage innovation through education.

The first sub-program is the only one that will imply a DGT participation, but for a large amount, as it will involve essentially external research expenditures, i.e. development studies contracts between the DGT's Department of Industrial and International Affairs and companies. These contracts will cover fields such as terminals, new networks and services, optical and wide-band transmission, technology, network digitization, and analog and miscellaneous systems. We should note that the share allocated to small and medium-size firms and industries will be increased by 2 percent per year by volume and that the "Small and Medium-Size Industry Mission" created at the Department of Industrial and International Affairs will promote the expansion of the role of small and medium-size industries in the electronic sector. Finally, in order to implement research, the DGT will encourage the creation of enterprises by qualified research engineers.

- PEP No 4: "To Develop the Communication Industries"

The goal here is to meet the challenge of new communication technologies (cable networks, direct television satellites, fourth channel, etc.), by creating economic and financial conditions that will lead to the emergence of a dynamic French audiovisual market.

To meet this objective, five sub-programs will be implemented: to create the economic and financial conditions required for the development of the software industry; to develop research, experimenting and education; to promote an environment conducive to creation; to encourage the decentraliza-

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tion of the audiovisual system; to improve our coverage of the domestic market and our international distribution efforts.

Under the second sub-program, the DGT will get involved in audiovisual research on the one hand (participation in the research program on the interactive uses of videodisks, in parcicular), and in experimentation with cablecasting services (contribution to the financing of the interministerial mission created to that effect, until 1985). We should also note that, as an indicator associated to the PEP, mention is made of an objective involving the creation of 80 local companies for the commercial operation of cable networks under the Ninth Plan.

Finally, the DGT could also make a contribution, under PEP No 1, "to modernize the industry through the use of new technologies and through a savings effort"; and under PEP No 3 in the more restricted context of the electronics sector.

Operating Contracts Between the State and the Regions

As mentioned above, the new French planning has created a dual contracting procedure, in the regions and in the companies.

Draft operating contracts between the State and the regions were examined, in a first stage, by the Interministerial Committee on National and Regional Development (CIAT) on 27 July 1983. A new CIAT evaluated the draft contracts late in 1983 and will approve the final contracts, as far as State commitments are concerned, in the spring of 1984.

The "philosophy" of the DGT is that, although it clearly displays its desire to associate the regions to the Plan implementation, it still wants to impose a fundamental constraint: the overal development must be consistent. Indeed, a telecommunications network is a whole, all elements of which are closely connected; therefore, if the overall quality of the network is to be preserved and the investment effort optimized, it is not really possible to multiply the centers of decision. Concern for coordination and consistence, therefore, must pervade any telecommunications development project, and therefore any investment project, whether financed by the national annual budget which is distributed to the Regional Directorates, or by regional budget allocations for the various investment categories.

This basic principle being stated, the development plan for traditional services (essentially the telephone) will remain the province of the goverrment, but regional authorities will be kept as fully informed as possible. On the other hand, the implementation of new services (videotex, remote warning, remote safety, etc.), the implementation of videocommunication cable networks and the realization of additional programs could be left up to local community initiatives.

At the time of the evaluation of the preliminary drafts of operating contracts by the CIAT on 27 July 1983, the Ministry of PTT indicated, however, that the Management Charter would impose material objectives in the context of company planning and that, therefore, it was neither possible nor desirable to com-

plement these objectives by making commitments as to the amounts to be spent and as to locations, as these would not result from the overall planning and might upset the balance of the structure.

Thus, in a practical way, an operating contract could contain a commitment to start equipping a region with data-communication services at a given date, but it should not force the PTT to equip the whole region within the Plan period, nor contain any financing provision other than for the infrastructure of the networks required. Similarly, as far as cable networks are concerned, individual operating contracts could be negotiated: they would fulfill a number of prerequisites and might contain a realistic equipment planning schedule.

The implementation of the last stages of the Sixth Plan and that of PEP No 4 of the Seventh Plan enabled France to bridge within 10 years or so the chronical gap existing between its telephone equipment and that of other developed countries.

By the end of 1983, the number of main lines per 100 French people was 38.5; it exceeded at last the numbers of lines then existing in Great-Britain and Japan. It was very close to the number of lines in the FRG. France remains behind the United States and a few developed countries of much lesser importance.

Following the transition period that marked the end of this catching-up stage, the Ninth Plan is stressing the fundamental aspect of telecommunications quality and management responsibility in the Medium-Range Management Charter, as well as more diversified strategic options (service quality, research and development, new products and services). The study of the economic, technical and industrial, social and cultural impact that these choices will have was started during the preparation of the Plan; it should be continued during the period which is starting now, and it should be used as a basis for the new strategic decisions that will have to be made during the next few years.

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SUMMARY OF INDUSTRY'S RECENT OVERSEAS ACTIVITIES, SALES

Paris TELECOMMUNICATIONS in French Jan 84 pp 12-14

[Article: "The Industry Is Exporting"]

[Excerpts] Cameroon

For the construction of a turnkey national television network, Cameroon has
accepted the proposal of a consortium consisting of French and German firms
for a production center and transmission lines. In this consortium, TRT
[Radioelectric and Telephonic Telecommunications] will be in charge of
the whole radio-relay transmission network.

For TRT, this will mean a contract for over 160 million French francs, in-
cluding the installation of close to 70 radio-relay stations and the produc-
tion of some 350 transceivers of the new NFH generation (6.5 and 7.5 GHz) at
its Brive plant.

Chile

Following an international invitation to tender on which ITT, Ericsson and
Telrad were bidders, the board of the Chilean Telephone Company awarded to
Thomson-CSF (Communications Division) the contract for the supply of two
MT-35 time-division exchanges. These two exchanges will be used to connect
5,200 subscribers in San Felipe and Los Andes, at the foot of Portillo, the
internationally renowned ski station. The contract also covers digital trans-
mission, to be provided by LTT [Telegraph and Telephone Lines], a Thomson-CSF
subsidiary, and the entire "turnkey" system is scheduled to be delivered in
time for the 1985 ski season.

Egypt

Follo   .n international invitation to tender, Petroleum Pipelines Company
of Egypt just awarded to Thomson (Radio Relay Division) the contract for a
wide telecommunications network connecting Cairo to Suez, Alexandria and
Asyut. The network includes in particular 30 radio-relay stations, private
automatic exchanges, and a mobile radiotelephone system. The contract is for
a total amount of 130 million francs.

Spain

SAT [Telecommunications Company] supplied the first digital radio-relay systems installed in Spain. During 1983, five FHM-914 digital links were supplied to various private Spanish power companies.

Upper Volta, Ghana, Benin, Mali, Ivory Coast

The Economic Community of West African States (ECOWAS) selected TRT for the implementation of the first stage of the Intelcom 1 project, which is to integrate the telecommunications networks of member states.

The contracts involved, amounting to a total of some 50 million French francs, cover the construction of international lines from Ouagadougou (Upper Volta) to Bolgatanga (Ghana), Fada Ngourma (Upper Volta), Porga (Benin), Korhogo (Ivory Coast) and Sikasso (Mali), and will make possible direct circuit routing from Ouagadougou to Accra, Ouagadougou to Cotonou and Abidjan to Bamako.

The equipment selected belongs to the new generation of 6.5-7 GHz radio-relay systems made by TRT. The configuration chosen is of the assisted main telephone channel type, and the second channel could be used to transmit a television program.

We should note that this project will make considerable use of solar energy; it will also use a new type of passively air-conditioned shelter developed by TRT.

The contracts will be financed by ECOWAS loans to member countries.

Upper Volta, Mali, Niger

Upper Volta, Mali and Niger have created a joint organization, the High Authority for the Integrated Development of the Liptako-Gourma Region, whose mission it is to develop this region. As far as telecommunications are concerned, this organization just awarded to SAT a contract amounting to approximately 60 million French francs, for the delivery of radio-relay links covering most of the network and connecting Ouagadougou (Upper Volta) to Mopti (Mali), Ouagadougou to Tera (Niger) and Gao (Mali) to Ayourou (Niger).

The 1,000-km long network will use digital equipment of the FHD 200/2000 family manufactured by SAT, and will include some 30 stations, most of which will be powered by solar energy. The necessary infrastructures (pylons, buried tanks, solar generator supporting structures, etc.) will be manufactured and installed by the African Telecommunication Company of Ivory Coast.

India

CIT-Alcatel signed two new contracts with India for a total of 245 million French francs. The first one was signed with the Indian Ministry of Com-

munications and involves the delivery of 16 E-10-B time-switching transit
centers, corresponding to 22,000 telephone circuits. The second contract,
signed with Indian Telecommunication Industries (ITI) involves the construc-
tion of a factory to manufacture E-10-B transit centers. The factory will
have a capacity of 30,000 circuits per year and will be located in Palghat
near Bengalore.

These two new contracts are covered by the extension of the agreements signed
by CIT-Alcatel last year, under which 200,000 E-10 time-switching telephone
lines were to be supplied in a first stage, followed by the construction of
a private-exchange factory with an initial capacity of 500,000 lines.

Netherlands

Following positive results on an experimental link, the Dutch Posts and
Telecommunications Administration had approved, already in March 1982, the
television version of the FLP-10 intervention radio-relay system developed
by TRT for the French Administration. Late last year, the interest shown
by the Dutch Posts and Telecommunications Administration materialized in a
first order involving two links to be delivered by TRT this year in
April. Following an international consultation, the Dutch Administration
made the final decision of adopting the system offered by TRT, which just
received a new order for 12 FLP-10 links. This is the first Dutch contract
awarded to TRT in this field.

Federal Republic of Germany

Following a restricted consultation with major potential suppliers of TV
reporting radio-relay mobile systems, starting in mid-1982, the German
Postal Administration accepted TRT's offer and awarded the company a con-
tract for the supply of 32 FLP-10 links.

Sudan

The Communications Division of Thomson-CSF just received a large order for
radio-relay transmission equipment. It involves a radio-relay line of over
1,000 km which will provide transmission on 960 telephone circuits and one
television channel. It will include 12 radio-relay stations equipped with
TFH-250 6-GHz low power-consumption equipment. Isolated relay stations will
be installed in buried tanks and powered by solar energy. For its part,
Telspace will supply a land station to be located near Port Sudan, and an
extension for the Khartoum land station, in order to establish a domestic
satellite link between Khartoum and Port Sudan.

Switzerland

The Swiss Posts and Telecommunications Enterprise just ordered a Stancom
electronic dispatching system from Thomson-TITN [Information Processing,
New Technologies], which is represented in Switzerland by Modulator (Bern).
This automatic system will be placed in service at the Marcotrade company
later this year. Marcotrade's Stancom system will be equipped with 96 lines

and will be delivered in a "hot standby" duplicated version with automatic restart switching. Having passed the acceptance tests of the Swiss Posts and Telecommunications Administration, it will be the world communication center of the Marcotrade company.

Thailand

In Bangkok, SAT just placed into service a Telcom-320 digital automatic exchange. It has a present capacity of 2,048 lines and will be used by the personnel employed at the EGAT (Electricity Generating Authority of Thailand) operating center. The automatic exchange, which at present is the largest digital private automatic branch exchange in Thailand also fulfills a transit function for the EGAT national private network as a whole, especially through 30-circuit MIC [pulse-code modulated] links also supplied by SAT. The exchange was placed in service on the date set in the contract. The contract had been awarded following an invitation to tender addressed to all the companies competing in this field worldwide and was financed by the Bank of Tokyo.

North Yemen

In the Arab Republic of Yemen, Thomson-CSF and its LGT [General Telecommunications Laboratory] subsidiary will provide television coverage in the Al Jowf Mareb and Al Beida regions. The network ordered includes two radio-relay lines and six stations equipped with TFH-250 6-GHz low power-consumption equipment. Isolated relay stations will be powered by solar energy. For its part, LGT will deliver the four TV transmitters (two 4-KW, one 400-W and one 200-W transmitters) to be located near the radio relay stations.

9294
CSO: 5500/2625

TELECOMMUNICATIONS MINISTER FOSTERS INDUSTRY'S EXPORT GOALS

Paris LES ECHOS in French 2 Mar 84 p 7

[Article by V. L.]

[Text] A first for Louis Mexandeau yesterday. After more than two years
almost exclusively devoted to Mails and Telecommunications, the PTT minister
has been initiated into information processing. The culmination indeed, of
last summer's agreement, according to which the very powerful, and especially
very rich General Telecommunications Directorate (DGT) was awarded what was to
become the famous TIB: telecommunication, information processing, and office
automation.

At the annual meeting of Syntec-informatique, the information processing
services and engineering companies (SSII) were lying in wait for Mr Mexandeau.
They pleaded for a "partnership" instead of a "tutelage," and cautioned
against an increase in charges, the lack of computer specialists, the freeze
in prices, and the loss in profitability. In this profession, which turned
over 10 billion francs in 1983, employs 26,000 people, creates jobs, covers
95 percent of the domestic market, is first in Europe and second in the world,
it is important to have a supply of grey matter and to earn money for
reinvestment.

Yet, out of the 7000 computer specialists trained by SSII every year, 5000
immediately go to other jobs, and the profession's net profit dropped to
1 percent of revenues compared to 3 percent five years ago. Under these
conditions it's hard to face the international competition.

Code of Good Procedures

Mr Mexandeau showed himself ready to help SSII manufacturers to consolidate
their positions on the national market and earn some points in exportation.
He is also ready to award PPT's maintenance services to computer enterprises
in order to lend a hand to foreign contracts (as in the case of Sofrecom for
telecommunications).

Ready as well to call upon the training system, PTT's once more, to complement
the role of National Education and speed up the training of computer
specialists. And lastly, ready to encourage an oft-requested independent
action thanks to the establishment of a code of good procedures between
equipment manufacturers and service companies.

A somewhat vague framework for a policy that Mr Mexandeau does not want to be
excessively controlled by the government.

"We support Bull, but not blindly. Our rule has always been to place all
enterprises in competition with each other, and we will do it in this field."
It is no secret among the minister's aides that several good European
agreements with Bull would be well received.

A policy whose spirit is very much like the one wished in Telecommunications.
Will it be applied with greater efficiency?

11,023
CSO: 5500/2619

COMMUNICATIONS OFFICIAL ON CABLE TV, SPONSORSHIP ISSUES

Paris LE MATIN in French 14 Mar 84 p 34

/ Interview with Georges Fillioud, secretary of state to the prime minister for communications, by Maurice Achard and Renaud Revel; date and place not specified_7

    / Text_7 The secretary of state for communications brings things up to date on the presidents/directors general of television channels who have expressed dissatisfaction with existing arrangements, the public service, television charges, Canal Plus / Channel Plus_7, cable TV, and the Regie francaise des espaces / French National Television Space Company_7.

/ Question_7 Of what value is the Haute Autorite / Higher Television Authority_7 if you call in the presidents/directors general of the TV channels who have expressed dissatisfaction with existing arrangements, as soon as they raise a problem?

/ Answer_7 The law carefully sets out the division of responsibilities between the Higher Television Authority and the Secretariat of State for Communications, which performs functions delegated to it by the prime minister with regard to public service in the audiovisual field.

/ Question_7 But didn't the meeting held last Thursday / 8 March_7 have an agenda which included other things beside these routine questions?

/ Answer_7 I am in continuous contact with the presidents/directors general of the various TV channels. That's my job. Of course, this meeting on 8 March was of particular interest to the media. The meeting was even given front page treatment because it came after a public discussion had begun on the future prospects of public service TV. Of course, this public discussion came up during this meeting, and this was quite natural, since a few days earlier I had made a statement to the press to correct a mistaken impression.

/ Question_7 What exactly did you say to the presidents/directors general?

/ Answer_7 I assured them that they were in no way affected by the restrictions on public statements which apply to the civil service. I even told them that the questions which they are asking are particularly to the point and deserve further consideration. However, I reminded them that the essential principles of the public service cannot be questioned and I emphasized the fact that certain aspects of the

debate, in my view, should be limited to an internal exchange of opinion rather than a public discussion, in order to keep this debate from turning against the public service itself.

/ Question / Did you speak to Herve Bourges and Andre Holleaux on the problems of the editorial staffs of TF1 and FR3 / television and radio stations / are now going through?

/ Answer / Not at all. Moreover, that is not my responsibility, nor is it that of the Higher Television Authority.

/ Question / You say that the public service must adapt itself to a new audiovisual situation, while continuing to distinguish itself from private radio and television stations. That is very theoretical. What does that mean, in specific terms?

/ Answer / Since the state broadcasting monopoly was abolished by the law passed in July 1982, private broadcasting stations may find themselves in the position of competing with public service broadcasting outlets which, up until then, were the only audiovisual media in the field. In connection with this change in the audiovisual situation the government and the majority of parties in the National Assembly h ve a very strong desire to continue to provide the functions proper to public service broadcasting--originality, research, the distribution of regional programs, etc --and to provide the public service stations with the resources to perform these tasks.

However, it is desirable that, outside its own field of activity, this public service network should also be a full partner in the new communications systems, whoever may have originated them. The public service network should become one of the suppliers of these new markets. It should be a competitor, like the others. And it is in a good position to be just that. It has the experience, the personnel, the equipment, and the talent. It is absolutely necessary for it to seize this chance.

/ Question / And if it doesn't do that?

/ Answer / If it doesn't seize this chance, there would be a very great risk of seeing our present and future TV screens taken over by foreign programs or parts of programs.

/ Question / Can you understand why the president/director general of one of the three traditional television channels envies the program charges for Canal Plus because they are so low?

/ Answer / The advantages provided to public TV service must be compensated for by a series of specific obligations. The public service has substantial funds available to it which are guaranteed in advance and which increase from one year to the next, in exchange for which it must perform a certain number of functions like service telecasts, road safety programs, major national programs, weather, etc. These do not involve major obligations. All of these programs, taken together, do not involve even 10 percent of regular programing.

/ Question / That doesn't keep Canal Plus from making the other channels jealous.

[Answer] That isn't the real question. Canal Plus assumes not only the commercial risk but the risk related to any innovative program. This program is rather daring because, for the first time in the world, a pay television network is aiming to cover the whole country. The success of Canal Plus depends on the number of families which subscribe to this service. For these families this will involve purchasing the equipment and paying the subscription fee. Therefore, this will take us into unknown territory, and no one can say now, with any degree of certainty, what will happen to it over the next year or two.

[Question] You have just spoken of service broadcasting. In this connection how do things stand with the proposed French National Television Space Company? This seems a very faroff possibility.

[Answer] No, it will come. It is in the course of being established. This project, which no one opposes in principle and which meets a more and more deeply felt need for institutional, economic communications, is at the service of social, educational, and cultural associations. This involves telecasts which are too specialized because of their content or because of the public at which they are aimed to find a place in normal programing. However, they should not be ignored, for all of that.

Moreover, many of the institutions which would like to make use of this new facility have the necessary financial resources available. The rational use of television time should thereby make possible a considerable increase in TV production and resources available for public service programing.

[Question] What do you expect from it?

[Answer] We expect the establishment of appropriate arrangements, given the fact that various parties making use of this resource have different views of it. It is a matter of knowing how this arrangement will work, what the charges will be, how the time will be divided between the different networks available, and what rules will be acopted for access to this program. For example, these telecasts should not be turned into instruments of political or commercial propaganda. Therefore, there will be a whole series of arrangements to be made. The discussion is now going on, but I think that it will be concluded in the next 2 months.

[Question] Therefore, there will be a delay which has nothing to do with the fact that you have been involved in the debate on the press in the National Assembly.

[Answer] In fact, there has been a delay which we will try to make up.

[Question] Another debate is going on regarding cable TV. Recently, Louis Mexandeau, Gaston Defferre, Bernard Schreiner, and Jacques Dondoux have[*] in turn expressed differing points of view concerning the profitability of this project and

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[*]From the Directorate General of Telecommunications.

the room for maneuver which local government authorities will have. People are waiting to hear your opinion, or in any case, your decision, in the absence of seeing the implementing orders issued.

[Answer] At the end of the summer of 1982 the cabinet made a decision to develop a system of cable TV in France, and funds were provided for the first stage of setting up a cable TV network. In technological and industria terms the optical fiber system was chosen, in preference to copper, coaxial cables. After that, there was a normal discussion aimed at defining the conditions for carrying out this project.

In some press articles and on the basis of some preliminary drafts concerning this project the nature of this cabinet discussion was exaggerated. In so important a matter, it is natural for all aspects of the problem to be considered. And it may be easily understood that each ministry attaches priority to the objectives that pertain to it. There are economic and financial aspects, industrial aspects, "network use" aspects which concern the Ministry of Posts and Telecommunications. There are aspects of program content which are of greater interest to government departments concerned with communications and culture.

As is the case each time that so wide-ranging a debate has been involved, it is necessary to have a certain number of interministerial meetings and other meetings between the cabinet ministers themselves, to harmonize the various positions. As there is also provision for the participation of local governments in this project, the particular interests of the communes, departments, and regions concerned must be taken into account.

[Question] But who is going to decide?

[Answer] Decisions which commit the French Government to a given course of action can only be made at the cabinet level. Unless common solutions are reached between the ministries concerned, it is up to the prime minister to make the decision, either at an interministerial meeting or at a cabinet session.

[Question] When will this be done?

[Answer] In the next few weeks. In any case, we are not too late. It is not because the decrees authorizing the establishment of this system have not been published that the beginning of cable television will be delayed. At the technical and industrial level all arrangements have been made in accordance with the decision made last year.

[Question] If the specific nature of the cable television system is to be local in scope, won't this local aspect involve political risks?

[Answer] Every initiative involving granting greater freedom involves political risks.

[Question] You make a very clear distinction between grants of funds in support of a program by various companies and sponsorship of a program. You support the former system and are rather opposed to the latter. However, on Canal Plus the word "sponsorship" is already part of the vocabulary.

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_/_Answer_/_ There also you are in an area where we are breaking new ground. Until now operations of this kind--granting funds in support of a program or sponsorship --were not permitted on the publicly owned networks. In that case also there is not only a **new** need but a new capacity to meet this need and the possibility of obtaining additional resources which are quite necessary. Therefore, we must go forward. However, we can only do so with some prudence because the very definition of each of these activities is not so simple.

On the one hand there is the concept of granting funds in support of a program or, in other words, participating in the preparation and telecast of a program by some organization which has nothing to do with the program in question--for example, a concert financed by an automobile manufacturer whose name only appears in the title of the program. At the other end of the scale there is the financing of telecasts which necessarily have the character of advertising, since they show certain models or products. Between the two extremes there is a relatively little known area which must be clarified with the interested participants. Moreover, this will be done in stages. It is practice and the law which, in fact, will determine the standards.

_/_Question_/_ Are you going to tell those responsible for Canal Plus to change their language when they speak of sponsorship of programs?

_/_Answer_/_ Canal Plus wants to broaden the field of its exclusive programs as much as possible, and that is natural. Therefore, this is a discussion which bears on things in reality. It is not an argument about words. We should distrust mere words.

_/_Question_/_ Regarding advertising, haven't you ever been convinced, in your heart of hearts, of the legitimacy of the claims of the private local radio stations?

_/_Answer_/_ In the course of my duties it is not for me to hold personal convictions. If it happens that I am not completely in agreement with a decision by the government, I will never have occasion to say so.

5170
CSO: 5500/2630

MICROWAVE LINK SEEN AS ALTERNATIVE TO CABLE, SATELLITE TV

Paris LES ECHOS in French 7 Mar 84 p 9

[Text] Jacques Dondoux, director general for Telecommunications, is asking
for a pause in the policy that advocates cable and satellites, because
audiovisual programs can be transmitted "much more cheaply by microwaves."

"A pause is needed and political choices must be more carefully made, because
there has been a refusal to examine all possibilities," states Mr Dondoux, who
in an interview with the paper LIBERATION strongly criticizes the direct
television satellite TDF1.

The cost of TDF1 is "exhorbitant," points out Mr Dondoux. Economically, TDF1
"is not efficient and is technically outdated," he adds; its power would have
to be increased to about 15 channels, and the ground reception area would have
to be reduced because the broadcasts fall upon the seas.

On the other hand, microwaves would make it possible to create about 10
additional television channels which would cover one-half of the country with
an investment of only 3-4 million francs, the Telecommunications director
estimates.

Microwaves are a "truly unexploited vein," continues Mr Dondoux. "In France,
public service has appropriated the frequencies. TDF claims that there are no
available UHF frequencies: that is not true, since they have just pulled a
frequency out of their hat for Tele Monte-Carlo in Marseille, when one year
ago they claimed that this was not possible," he stresses, adding that
"frequencies are being wasted by creating large area broadcasting systems
instead of operating more locally."

Microwaves are an "intermediate stage" before France is cabled, a step which
will take 10-15 years, "and not one half-hour," stated Mr Dondoux.

The French optical fibers industry will be internationally competitive in four
or five years, while microwaves will have satisfied the French audiovisual
needs in the meantime, he indicated.

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DGT IMPLEMENTS NATIONAL CELLULAR TELEPHONE, RADIO PLAN

Paris L'USINE NOUVELLE in French 15 Mar 84 pp 34-35

[Article by Eric Walther: "Wireless Communications Getting Entangled"]

> [Text] Inadequate infrastructures, saturated frequencies.
> The DGT [General Directorate of Telecommunications] just
> reacted by launching two programs of action. A manna for
> manufacturers in this sector.

Thirty thousand private firm networks are managing connections with some
250,000 "radio mobiles." These figures are impressive, but not well known;
they show what an essential function wireless communications are now playing
in the country's economy. Indeed, without radiocommunications there can be
no reliable emergency assistance, no efficient maintenance on customers'
premises, no optimum shipping schedules. And... no truck drivers' strike!

However, the development of this tool, the wide range of services it will
soon be in a position to offer are now threatened by the inadequacy of
existing infrastructures and by frequency saturation.

As the number of radio mobiles is growing at an annual rate of close to
15 percent, transmission channels in certain "hot areas" are getting con-
gested. And the division of frequencies operated when required is often a
source of difficulties for users. In brief, wireless communications are
getting tangled.

With the simultaneous launching of two programs of action, the DGT is hoping
to spin a relay web covering the whole country, to tackle effectively the
frequency shortage through the use of advanced technologies.

Two programs for two systems. The first one is called RARC [expansion un-
known] and will tackle private networks; the mission of the second one is
to develop the cellular radiotelephone. The latter is reserved solely to
public correspondents; in other words it is a car telephone connecting a
car to the switched network. Under the RARC, the DGT hopes to have installed
500 relays covering 80 percent of the territory by 1990.

This initiative marks a turn in the Administration's radiocommunications policy. Until now, the 1,000 relays operating on French territory belonged to private installers. Another essential difference is that the RARC will enable users to communicate throughout the zone covered by the systems.

MATRA [Mechanics, Aviation and Traction Company] won the contract for the industrial implementation of the program. Its radiocommunications division introduced the Radiocom 200 service, the RARC pilot system, in December 1982 in Paris. The relay is already operating with 1,000 mobiles and 250 clients.

MATRA Radiocommunications is now in a good position for forthcoming operations. It has booked orders for 14 relays (1 million francs each) and has a good chance of supplying the 100 or so additional relays which the DGT is planning to buy every year.

The RARC may also drastically upset the habits of the 600 approved installers who used to get most of the 600 million francs spent annually for radiocommunications. New equipment, new standards: they will have to adapt if they want to remain in the race.

Certainly, there is no question of a monopoly: the RARC is not replacing existing networks and will not have the exclusive right of creating new ones, but there is no doubt that its scope and the modularity of the system will attract many firms.

MATRA is stressing this peculiarity of the RARC. Actually, the client will be able to choose the services he wants: area covered, duplex connections, group or subgroup calling, etc.

The DGT indicated that all manufacturers will be informed of the system specifications by next summer. The price of the mobiles (over 25,000 francs at present) should decrease appreciably in time, as a battle is bound to take place among specialists, whether French like Thomson or SECRE [Electronic Studies and Engineering Company] or foreign like Storno (a General Electric subsidiary), Motorola, Ericsson, etc.

Finally, this operation happens to be launched at a time when radiocommunications are assuming a new function. "Computerized radiocommunications ["radiotique"] are about to be born. With the emergence of data-processing, a new revolution is taking place in wireless communications," according to Christian Poisson, who resigned his position as manager of the Motorola Communications Division to create two radiocommunications consulting companies. As a result, there will be an increasing demand for services including management, remote recording, connections with other specialized networks, exceeding the scope of mere voice communications.

The first records obtained through the Radiocom 200 experiment show that more clients than had been expected wish to have access to the switched network. Contrary to former private networks which—except in certain well-defined cases—could not be connected to public telephone lines, the RARC allies the two systems to suit the user. We may then wonder how the RARC

and the cellular radiotelephone program are going to coordinate their promotion strategies.

The cellular radiotelephone program is also a topic of current interest since an invitation to tender was sent to manufacturers jointly by the French and German Posts and Telecommunications Administrations on 15 December 1983. The bids must be received at the latest on 15 March. It was high time for France to revise its "car telephone" plan. The 15 million calls per year made from 8,700 mobile substations, 5,000 of them in Paris, were far from reflecting the actual needs of an ever greater number of users. Waiting lists were getting dangerously long, although subscriptions are very expensive.

The first instance of European cooperation in telecommunications, the Franco-German operation made the technical decision of using the 900-MHz band, the one that is used in the United States. Contrary to the RARC, the cellular system enables the mobile party to continue his conversation without being interrupted when he crosses over to another cell (range of a relay).

The Posts and Telecommunications Administration is planning to equip Paris, Lyons, Marseilles and the highway connecting them as well as the Lille area, starting in 1987. For manufacturers, this will represent sales of several hundred thousand radiotelephones.

Desirous to divide up the pie, the French and the German Posts and Telecommunications Administrations warmly recommended the creation of international consortiums. There is a problem: CIT-Alcatel was already asssociated to Philips, and Thomson (the prime contractor for existing car-telephone network) with Siemens. In the meanwhile, the two French telephone leaders got together last September... Therefore, it is difficult to arrange a "four-way deal" within a few months, especially since the two pairs had already started work each on a system.

The two sets of partners will answer separately the invitation to tender, although they have been careful to adopt identical standards. That way, they are sure of getting a minimum of the orders that will be placed during the next 10 years. Of course, there will also be other competitors on 15 March, among which MATRA in association with Bosch.

Because of their demographic concentration, countries like France can only manage the frequency shortage while taking advantage of the technological leaps achieved with respect to switching. The machine has been started, but we are still a long way from the end of the telephone or telegraph wire that was recently predicted by Arurras Slekys, vice-president of the Canadian Novatel company, a pioneer of cellular telephone in North America. He went on to indicate that only the first steps toward a "wireless world" could be accomplished by the end of the decade...

9294
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MARKETING STRATEGIES FOR TELEMATICS, VIDEOPHONES

Paris REVUE PARLEMENTAIRE in French Feb 84 p 14

[Article by Alain Bravo, production manager at the General Directorate of Telecommunications: "The Production Policy of the General Directorate of Telecommunications"]

[Text] New Telephone Balance

Now that the implementation of the Priority Action Program (PAP) of the Seventh Plan has been completed at the close of the year 1982, we are forced to acknowledge that the French telephone network has undergone what amounts to a metamorphosis during the past 20 years. The 20 millionth subscriber was officially received at the Elysee palace last 7 June by the President of the Republic, but in 1962 France had only 2.5 million subscribers; it reached 5 million in 1972 and it passed the 10-million mark in 1978.

Within 10 years, the number of public telephone booths was multiplied by 15, from some 10,000 in 1972 to close to 150,000 late in 1982, which is another illustration of the extremely rapid expansion of telephone equipment throughout the country.

The medium-term Telecommunications Management Charter for the years 1983-1986, which contains permanent management rules and development prospects for the French telecommunications, also provides for a continuous growth of these two figures, the 1986 goals being: 24 million main telephone lines, corresponding to 94 percent of all household; 200,000 public telephone booths, i.e. one booth for each 250 people.

However, these growth forecasts no longer reflect a massive effort to catch up, but they result from the strengthening of the balance that has now been achieved between telephone supply and demand, globally as well as locally. The main goal is now to provide quality connections. In 1982, the proportion of requests satisfied within 15 days was 33 percent; it is expected to be around 80 percent by 1986. Already, one request out of two is satisfied within one month, and the average time is less than two months. Late in 1983, only one percent of the requests dating back to 1982 will remain pending, and they all correspond to cases presenting exceptional difficulties.

The Management Charter also aims at consolidating the reestablishment of quality service.

In a first stage, subscribers took special notice of the free flow of traffic and of service availability. During the past 8 years, dial tone delay during normal-tariff hours was eliminated, and the number of failures per subscriber per year decreased by 40 percent. By the end of 1982, 82 percent of the failures were repaired within 2 days and 99.2 percent within 8 days.

The subscriber technical management implemented late in 1979, together with careful and efficient marketing efforts, makes it possible to tackle problems and contributes to a progressive improvement of telephone "comfort," which is to be achieved through new priority efforts which are called: improved service reliability, flexible tariffs, clarity in billing, easy access to information, and telephone booth availability.

The qualitative and quantitative development of the telephone was obtained and will continue through rigorous technical and financial management and through the personnel's total support to the effort undertaken, resulting in remarkable and increasingly demanding productivity gains. To go from 8.5 million main lines in 1976 to 16 million in 1980, i.e. to nearly double the number of main lines, only 25,000 jobs had to be created, i.e. an increase of some 20 percent; during the next 4 years, the number of lines will increase from 16 to 22 million, and 5,800 new jobs will be created--2,500 of which to reflect the reduction of the work-week to 39 hours effective on 1 January 1982. In this respect, normal implementation of the Management Charter should yield further productivity gains that would be distributed equitably and as planned among the various personnel categories (through improvements in working conditions), telephone users (through increasingly favorable tariffs corresponding to high-quality service) and the national community (through a dense and efficient network entirely financed by its users).

Technical Unity: A Must

To meet the public's new expectations, technical departments must now tackle the standardization of data communications network and prepare for the development of videocommunications, and in doing so they must progressively integrate the various facets of communications: voice, data, images.

The new technologies, which seem to be proliferating, actually fall into a highly structured framework serving well-defined purposes.

Indeed, data communications involve both a first integration of the telephone with data transmissions and a dissemination of the data-processing tool, irrespective of the size and location of the companies that use it.

Superseding teleprocessing networks, which consist of dedicated lines permanently connecting one point to the next and are subject to a fee based on their transmission capacity and, to a large extent, on their length, the Transpac network, a public packet-switched data-transmission network, was opened in 1978. Characterized by its flexibility of operation

and a tariff base which is independent of distance and solely a function of the data volume transmitted, Transpac, which now counts over 10,000 subscribers, is the major piece of the data-communications network and represents a considerable contribution to national and regional development.

The Videotex service, which allies the telephone network and the Transpac network, makes material use of these new possibilities to enable telephone subscribers to dialogue with a computer. One example of a professional application of the Videotex service is the system now equipping the French National Assembly, which already makes it possible for 100 deputies (later, in 1984, all mainland France deputies) to have access to information concerning parliamentary life and to an economic, legal and social data base through "Minitel" terminals, from their constituencies. In households, the Electronic Directory which is now in use in the west of France will soon be available in Paris and in Picardy, and progressively extended to another 10 regions or so.

As far as telecommunications are concerned, the next stage can logically be inferred from the initial telephone-data integration, with the addition of images. In this respect, 1982 was marked by two major events:

- the law of 29 July on audiovisual communications;

- the decision made by the government on 3 November, at the suggestion of the Ministry of Posts and Telecommunications, to equip the country with interactive cable networks.

The corresponding equipment plan provides that the Ministry of Posts and Telecommunications will order approximately 1.4 million outlets from now until 1986.

A prefiguration of these forthcoming videocommunication networks, the Biarritz operation, which was decided in 1978 and whose goal it is to acquire industrial technological expertise and evaluate the public's interest in new services, is assuming its full dimension in the context of the government's project. The first videophone connections should be established late in 1983, and they should become commercially available early in 1984. For their part, business circles, and even communities, are increasingly being offered videocommunication in the form of videotransmission--broadcasting specific programs projected on large screens--and especially videoconferencing which enables two groups of people meeting in distant private or public studios to see one another and, through auxiliary equipment (camera, telewriting, telecopying, etc.), to transmit images, graphics and documents.

The many possibilities offered by the range of network technologies are offered simultaneously to communities, economic, cultural and information agents, the media and the general public, and they make instant communication under all its forms available to all and in all locations. Assuming the most diverse forms, these technologies actually represent the many facets of an integrated body which is now taking shape. When the Telecomm 1 satellite is placed into service in 1984, it will be a French first in the field of full telephone-data-image integration.

Economic and Social Decentralization

If telephone, data communications and videophone services are to expand,
existing infrastructures must be modernized and their capacity increased.
Apart from their direct impact, which we mentioned elsewhere, on the spe-
cialized telecommunication equipment industry, these equipment operations
have induced effects in two respects.

First, to complete investment projects, close to 2.5 billion francs per year
are allocated for the construction or expansion of the buildings which house
telephone exchanges, administrative services, logistic services, etc. For
the public works sector alone, over 4.5 billion francs of credits for the
development of urban networks are allocated to close to 2,000 enterprises,
usually of a modest size (10 people or so), and the development of video-
communication cable networks will mean more business for them.

Therefore, the General Directorate of Telecommunications' contribution to
the preservation of local jobs takes the form of a 7-billion-franc invest-
ment with a very strict scheduling.

From another point of view, the existence of a high-performance network that
will reduce or even abolish the effect of distance, even with respect to com-
munication costs, will make possible redeployments easier. The impact of such
a network cannot be quantified because it is diffused and takes many forms,
but it is considerable as was shown, a contrario, by the fact that, not so
long ago, economic agents were handicapped by the qualitative and quantitative
inadequacies of the French telecommunications network. Financial institutions
and banks, trading companies and distributors (catalogue retail sales), ser-
vices (tourism, transportation, hotels, etc.), agriculture, health depart-
ments and local communities are now using telecommunication networks to
modernize their management, expand their range of services, improve their
efficiency and become more competitive throughout the world.

Finally, one of the most important induced effects could turn out to be that
the social body as a whole now can communicate instantly and interactively
throughout the country.

As the minister of posts and telecommunications, Mr Louis Mexandeau, recently
pointed out: "The telephone is increasingly becoming the nervous system of
the country's economy, and it has also become an extraordinary tool for
social communication."

The efficiency of such a tool is further reinforced in the case of the data-
communication and audiovisual means which are now becoming available and,
more than ever, telecommunications are playing a part in, and contributing
to the evolution of economy, the environment, information, education and
culture.

Continuing an internal decentralization trend started in the late 1960's,
the Telecommunications Administration finds in its new responsibilities--

the result of data-communications and cable networks--additional reasons to expand its traditional relations with territorial communities.

In addition to consultations with municipal authorities, especially to co-ordinate maintenance work, the regional implementation of national equipment programs has always taken into account the local economic or social priorities that had become apparent in the field of telephone.

The introduction of new data-communication services gave us an opportunity to implement a new form of regional policy, since the introduction of house-hold videotex, with the electronic directory, is subject to a joint application being filed by the Regional Council and the local press.

Finally, local communities will not only initiate telecommunication cable networks, but they will also be shareholders in these networks, which the government decided would be built and operated by the Telecommunications Administration. To ensure that all projects are technically equal, the principle of tariff equalization throughout the country was adopted. As in the case of the telephone and data communications, the principle will apply in space, i.e. to urban as well as to rural areas, and in time, i.e. to the various techniques used.

The government has given to the Telecommunications Administration the mission of creating, perfecting and making available to the nation modern telecommunication networks providing the best and most modern services at the least cost.

In the strict framework of this mission, the new telephone balance is being established, the imperative need for technical unity is being translated into facts, and economic, cultural and social decentralization is progressing.

CNRS-CNET STUDY MICROELECTRONICS FOR VIDEO COMMUNICATIONS

Paris ELECTRONIQUE ACTUALITES in French 9 Mar 84 p 16

[Article by F. Grosvalet: "The Recently Created CNET-CNRS Pole Wants to Prepare for the 'Micro-Optoelectronic' Era"]

[Text] As announced in our last issue, the CNET [National Center for Telecommunications Studies] and the CNRS [National Center for Scientific Research] have just formed a scientific group in the field of III-V microelectronics to coordinate their programs and operations.

This joint pole, the first of its kind to regroup the two public organizations in the field of microelectronics, will carry out basic and applied research on III-V microstructures (super networks), their end goal being the industrial development of video communications components (integrated circuits, laser, etc.) to bridge the present "gap" with Japan and the United States. A gap which is getting wider, even though some French laboratories here and there have obtained remarkable results (especially in the fields of TEGFET [expansion unknown], heterojunction bipolar transistors and constrained super networks). The scientific group could also act as a stimulant for industrial laboratories working in the same field (Thomson-CSF Central Research Laboratory, Marcoussis laboratories, Electronics and Applied Physics Laboratories), and it should help our country's semiconductor manufacturers succeed in their industrial conversion to micro-optoelectronics. At any rate, this is the ambition of those who created the group. Yet, they recognize that acceptance by the industry is not yet evident, although there have been examples of CNET-industry collaboration that gave interesting results. For instance, when CIT-Alcatel industrialized the 1.3-micron laser developed by the CNET; and when the Central Research Laboratory cooperated in developing an InP-GaInAsP laser with a distributed resonator emitting at 1.5 microns.

To achieve its goals, the CNET-CNRS scientific group should be given means similar to those granted to that sector abroad (Great-Britain, FRG, United States and Japan). Although no decision has yet been made concerning investments, the CNRS is said to have made an "exceptional" effort; as for the CNET, it already has substantial equipment (Cambridge electronic masker, ion implanter, last-generation Riber molecular-jet epitaxy equipment, Auger scanning

microscope, to name a few). This equipment will be used by the scientific group for their joint research. In a first stage, the group will have at its disposal the CNRS own laboratory created early in February (30 people delegated from the Solid-State Physics Laboratories of the Bellevue Advanced Teacher Training Schools and Orsay Fundamental Electronics Institute) and the CNET Bagneux laboratory (250 people). The CNRS laboratory should double its personnel within three years, and by then the scientific group should be working at full speed. However, its officials hope to achieve results before that date.

In the future, the scientific group will also be open to other laboratories, industrial as well as public. And it is also not excluded that this purely French initiative could lead to a European collaboration.

Toward Integrated Circuits Including a Laser Plus Its Control Circuit

The constituting agreement and the research program of the CNET-CNRS scientific group are not yet fully set. But the main orientations of their joint research, which are related to and support the research carried out until now by the two parties, are known. They will revolve around the study of the physical characteristics involved in microstructures, and show a determination to achieve rapidly the development of components using these characteristics. They might consider, for instance, the realization of micro-optoelectronic circuits integrating a semiconductor laser and its control circuit on a single chip. Such an integration is not possible today, especially because the laser threshold current is too high; to achieve it, current values of 1 mA and less must be obtained, which is possible in theory through the use of super networks.

The CNET-CNRS scientific group should therefore direct its efforts toward:

- research on transport phenomena in III-V compounds, crosswise and parallel to the layers;

- research on the optical properties of microstructures and quantum-well structures;

- modelization;

- research on InP-InGaAsP heterojunctions for phototransistors and heterojunction bipolar transistors; and

- single-dimension structures, localized molecular-jet epitaxy (coupling molecular-beam epitaxy and electron-beam lithography techniques).

The two public organizations have already carried out research in these fields, each for itself, but the CNRS--which is more concerned about basic research--has felt the need to dispose of modern technological means to give a concrete form to the research carried out in its various laboratories.

In the scientific group, the CNRS should also play a part in training industrial personnel and should welcome a number of students working on their engineering doctorate theses (the Bagneux laboratory should offer many more grants of this type than the average number available at other CNRS laboratories).

9294
CSO: 5500/2624

PRODUCTION, MARKETING OF E-1O EXCHANGES IN IRELAND

Paris TELECOMMUNICATIONS in French Jan 84 pp 43-47

[Article]

[Excerpts] Aware of the efforts that had to be made to endow their country
with a renovated telephone network capable of meeting an ever more pressing
demand, officials of the Department of Posts and Telegraphs at the Ministry
of Transportation, Posts and Telegraphs announced already in 1978 a network
modernization and extension plan based on the installation of electronic
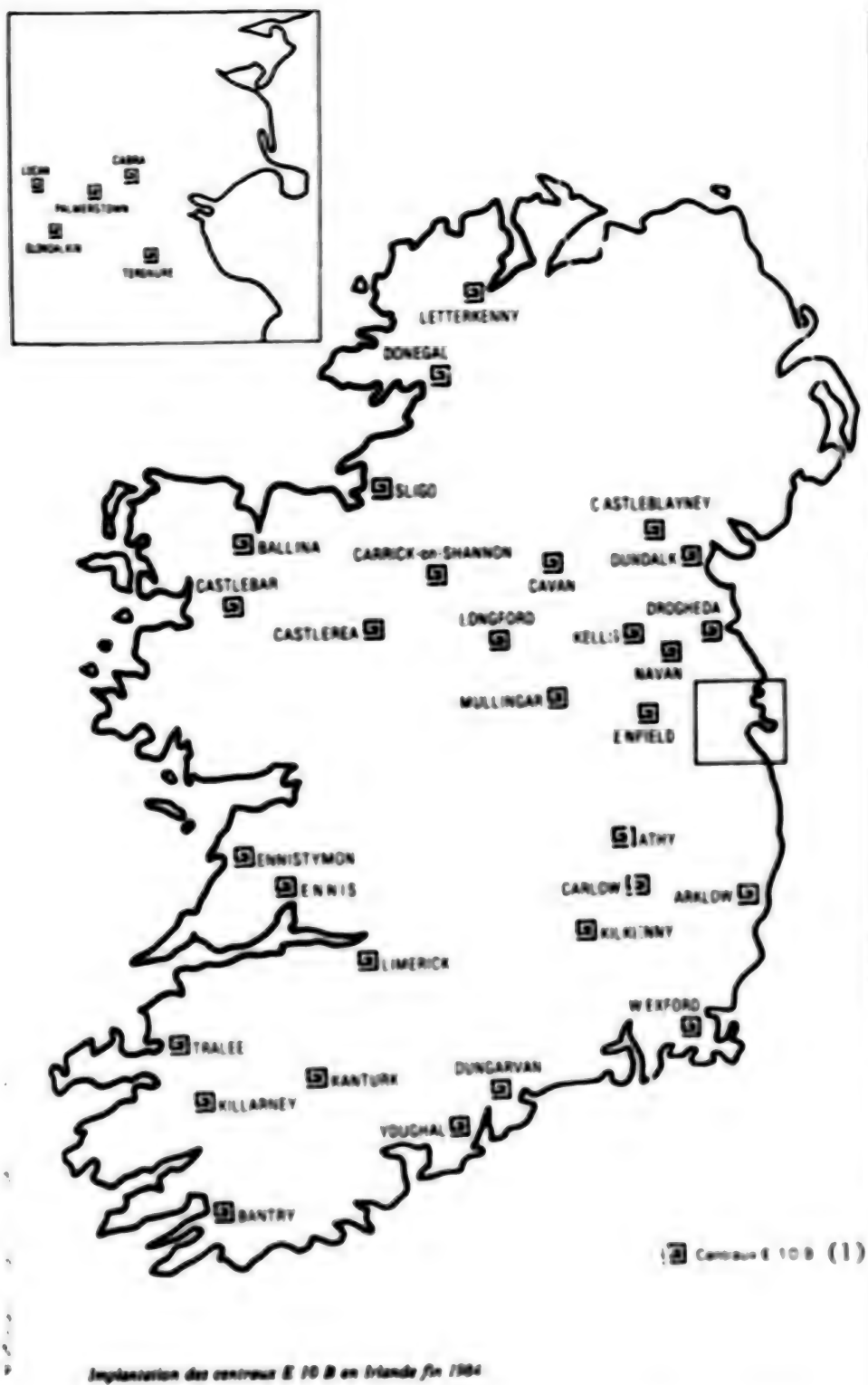exchanges.

Credits were then voted and a first five-year plan implemented from 1978 to
1982. The Irish Republic is now implementing a second five-year program in-
volving the procurement of 500,000 lines between 1982 and 1986.

The program contains provisions for the investment of over 800 million Irish
pounds (punts): 176 to purchase exchanges, 152 for the installation of trunk
lines, 385 to connect subscribers, and 130 for the construction of new
buildings.

In this context of "determination," the Irish administration launched in 1979
an invitation to tender for the procurement of some 100 electronic exchanges.
Two manufacturers were selected: LM Ericsson and CIT-Alcatel. Each was
awarded 40 percent of the contract; the remaining 20 percent will be awarded,
in all or in part, to the supplier with the best record. CIT-Alcatel's share,
an order for a total of 47 exchanges, is estimated at some 500 million francs.
The two approved suppliers were also given an eight-year supply contract,
which was also divided into two approximately equal parts.

One of the conditions set by Ireland to award the contract was that the
equipment required would be manufactured in Ireland. To meet this require-
ment, CIT-Alcatel created a holding, Alcatel Ireland Ltd, which regroups
two companies: Telecom Alcatel Ltd, whose object is to manufacture and sell
equipment in Ireland; Telecom Alcatel International Ltd, an export company.

An industrial site remained to be found. Several were offered by the IDA
(Industrial Development Authority). The Bandon site was selected because
it is near Cork, the second largest town in the country, and because it has

E-10-B Exchanges Installed in Ireland By the End of 1984

Key:

1.   E-10-B Exchanges

frequent sea and air connections with Brittany where CIT [Industrial Tele-
communications Company] has its plants and technical centers (Lannion and
Treguier).

The Bandon plant started production late in November 1982. It is now em-
ploying 105 people and produces E-10-B exchange components for the Irish
network. In time, it will provide the final quality control of these ex-
changes, install them and place them into service.

The production contemplated is of some 30-50,000 lines per year. The parent
company has agreed to buy back 40 percent of the production, up to 23,000
line equivalents; in addition, it wants to rationalize its production by
cross-trading products of equivalent value. However, before local produc-
tion can proceed at full speed, 27 E-10-B exchanges or so will be delivered
to Ireland, and the latest of these will incorporate an increasing pro-
portion of Irish-made components.

An Exemplary Cooperation

A fruitful cooperation in the telecommunications sector has been established
between France and Ireland, both at administrative level and in the industry.

As far as the administration is concerned, experts from the Telecommunica-
tions Technical Control Department (SCTT) are helping with the acceptance
cf the exchanges delivered by CIT-Alcatel. They work in close cooperation
with their Irish counterparts and initiate them to their control methods.
Thus, four SCTT experts carried out acceptance tests on the Ceannanus Mor
(Kells) E-10-B exchange, three did the same for the Bantry exchange, and two
for the Castle Blaney and Sligo exchanges. But exchange acceptance is only
one facet of their cooperation. Another very important facet is training.
In this respect, SOFRECOM [French Telecommunications Equipment Studies and
Construction Company] experts have shown the Irish how to operate and main-
tain the E-10-B exchanges, during training periods attended by Irish ex-
change heads. Technical documentation is also provided to Irish technicians.

The creation of a CIT-Alcatel industrial plant in Bandon is also a promising
form of cooperation. First, since the plant is on Irish soil, it provides
jobs for the local people, and continuity in the supplies, and it is also
the key to new export markets. In addition, whereas CIT-Alcatel's immediate
objective is to deliver E-10-B exchanges, other prospects could arise both in
the field of transmission and in that of data communications. As far as
training is concerned, the manufacturer went beyond mere theoretical teaching:
exchange assemblers trained in Dublin were sent on missions in the Middle East,
in particular to install E-10-B exchanges.

The French-Irish cooperation can be said to be exemplary for it is part of
a long-range operation supported both by the administration and by the indus-
try. Business telephone, progressive network digitization, these are assets
that will bring about profound changes in Irish communications and contribute
to the country's economic development.

9294
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'ARCHITEL': COMPATIBILITY, STANDARDIZATION OF TELEMATIC SYSTEMS

Paris TELECOMMUNICATIONS in French Jan 84 pp 64-67

[Article]

>[Text] If data-communication services are to develop
>harmoniously and to become accessible to the largest
>possible number of users, the broadest possible com-
>patibilities must be achieved between the various types
>of terminals, data-transmission and dissemination net-
>works, data-processing systems and networks and the
>many data-communication services. Therefore, the
>General Directorate of Communications decided to base
>its overall development policy for data-communication
>services on a unified architecture of data-communica-
>tion interfaces and protocols opening onto public net-
>works and data-processing systems: Architel.

The opening of communication networks has become the users' first require-
ment. Indeed, despite the size of the demand, the development of corporate
data-processing systems is much hindered by the difficulties in communicat-
ing resulting from the use of incompatible equipment (terminals, networks
and host systems). Actually, as far as the user is concerned, the data-
communication, data-processing and office automation services are like the
many pieces of a puzzle, pieces that will not fit together.

Increasingly, users refuse to be forced to build either closed compatible
networks placing unacceptable limits on communications and inducing depen-
dence on the manufacturer's product policy; or complex and costly networks
using "black boxes" to achieve approximate interoperation between dissimilar
systems.

To meet the users' expectations for open-ended communication networks, the
General Directorate of Telecommunications (DGT) decided early in 1982 to
base its overall development policy for data-communication services on a
standard architecture of data-communication interfaces and protocols opening
onto public networks and data-processing systems.

This architecture is called Architel and is based on pertinent recommendations
from the CCITT [International Telegraph and Telephone Consultative Committee]

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and the ISO [International Organization for Standardization], and in particular on the Open Systems Interconnection (OSI) standards[1] now being defined jointly by the CCITT and the ISO. Indeed, the objective of overall consistence aimed at by Architel can be achieved only on the basis of international standards ensuring the perenniality of industrial products and, therefore, that of the users' investments: as a result, when the National Center for Telecommunication Studies (CNET) prepared the Architel specifications, it did so in close collaboration with international standardization organizations.

Based on the most recent international agreements obtained between the CCITT and the ISO concerning the standardization of Open Systems Interconnection, the CNET just published user specifications for the Architel protocols ("STUR Architel"). These specifications can be expected to be broadly disseminated, both in the PTT [Postal, Telecommunications and Telebroadcasting] administration and the industry (manufacturers and consulting companies) and among large users of data-communication services. They were developed by the Architel working group consisting of CNET experts who closely collaborated with the Directorate of Industrial and International Affairs (DAII), the Directorate of Production (DPR), the Directorate of Commercial and Data-Communication Affairs (DACT) and the Directorate of Programs and Financial Affairs (DPAF). The publication of these documents marks an important step in the work on the Architel protocols.

Basic Decisions Concerning Protocols

As far as communication architecture is concerned, the OSI reference model developed jointly by the ISO and the CCITT forms the basis of Architel. However, complying with the functional seven-layer division defined in the OSI reference model is not enough to guarantee the compatibility and evolutionary potential of a system. The protocols, i.e. the rules and formats used to exchange data between systems, must also be defined layer by layer. Therefore, Architel is privileging standardized protocols, or protocols about to be standardized, whenever they perform the required functions.

When there is no standardized protocol meeting the requirements of Architel user services, the protocols required are specified, making maximum use of international work and the state of the art in the field. Therefore, whenever necessary, Architel is anticipating international standardization.

The protocols are then submitted to standardization organizations and actively promoted within these organizations when the services they offer are related to topics being studied. In this context, to meet the requirements of the various data-communication services, the Architel protocols rely on a few fundamental technical choices (see Figure 2).

Applications

Architel protocols are already used by data-processing services such as videotex [teleprocessing], teletex [electronic mail], facsimile transmission and message routing, thus providing a set of benefits to users, both directly (savings, ease of use, reliability, evolution potential) and indirectly (consistence, standardization, perenniality of the investments).

The protocols are also suitable for the DGT's internal uses, especially for commercial data-processing and technical management systems (detailed billing, videotex access point management center, public telephone card concentrators, etc). In this context, the DGT is aiming at two complementary goals: to provide compatibility between the various systems, and to achieve software savings, with respect to initial development and to maintenance costs.

Finally, the Architel protocols can support the implementation of corporate data-processing and office automation networks.

Architel and Videotex

To illustrate the use of Architel protocols and the benefits derived by their users, we shall take the example of videotex.

The Service

Through a videotex terminal (Minitel for instance), users of the videotex service have access to data bases or videotex servers (see Figure 3), which may be used to call on consulting services or transactional services. The server access network consists of the switched telephone network (terminal end), the Transpac network (server end), and a series of access points ensuring interoperation between these two networks.

The access point, therefore, fulfills the now traditional function of terminal concentrator (see Figure 3). In the initial version of the videotex network, the exchange of messages between servers and access points is governed in an elementary manner by the X29M protocol (the X29 protocol modified to take into account videotex terminal specificities, for instance function keys). Thanks to Architel, access point functions may be considerably enhanced, as we shall see later.

Service Requirements

First, to ensure the rapid development of the videotex service, especially in a professional environment, everything possible must be done (more so than in the case of any other service) to make sure that it fits in smoothly into the users' data-processing systems (it must be compatible with data-processing and office automation systems) and to retain extension capabilities (for instance, the use of other types of terminals), thus making it possible to write off the corresponding investments over a longer period of time. Through the consistent overall framework it offers, through its international basis and through its technical lead, Architel intrinsically meets these requirements.

In addition, recent videotex experiments (Teletel, electronic directory, etc.) have shown the need for an enhancement of the videotex service offered. This enhancement is expressed through improved service quality, essentially in the following fields:

- Image composition: Greater flexibility and improved modularity are expected in imag description to make image designing, handling and alteration easier.

- Design and implementation of ergonomic dialogues: Users' requests focus especially on the dialogue offered to them. Greater rigor is desired in dialogue organization to make it possible:

- to simplify the use of dialogue;
- to provide adequate asistance to users;
- to standardize dialogues for applications of a similar nature;
- to provide an anticipatory management service to the user who is familiar with a given application and takes over before he is asked to do so, so as to ensure that the dialogue does not get out of step, that data from the server and the keyboard do not get mixed, and to prevent the occurrence of unforeseen circumstances which might disturb the user;
- to reduce response times, especially during a dialogue stage forming a whole in a given application, for instance, the entry of a form.

Considering the importance of ergonomic problems, all servers should be extremely flexible in designing and managing dialogues, especially with respect to form definition, checks on the data entered, data entry sequences (between fields and between forms) and the assistance provided to the user.

- Decreased server processing-load: It should be possible to transfer certain functions to the access points (for instance assisted entry in the form mode) so that a single server could manage simultaneously a larger number of terminals.

- Distribution of applications among several systems: There is a recognized need for servers that could distribute their application(s) among various physical systems without having to go through a tedious series of connection openings and closings; the critical nature of this need will increase as the videotex service expands.

- Transmission economy: The videotex service extension is conditioned by its utilization costs. Therefore, many users have expressed their concern about reducing the costs involved in transmitting.

- Protection, confidentiality: The data circulating on the network are getting more numerous and more sensitive all the time; security means must be implemented.

Selected Protocols

To meet users' expectations in the context of its generalized virtual terminal protocol, Architel specified the profile corresponding to the videotex service requirements thus described. The protocol is based on the session and transport protocols standardized by the ISO and the CCITT, as we already mentioned above. In this context, an open end-system, or server system, is connected through relay open-ended systems (Transpac nodes) with an open end-system, or client system, consisting of "the user, a terminal, the switched

telephone network and the access point," as shown on Figure 3. These proto-
cols will be implemented in the videotex network in 1985, and the perenniality
of existing protocols (X29M) will remain guaranteed for applications that
would not have to be modified.

- Transport Layer

The two transport classes adopted by Architel can be used in the context of
videotex.

- Session Layer

Videotex service requirements demand the use of the BCS [Basic Combined Sub-
set] in the TWA [Two-Way Alternate] mode, i.e. a simple-dialogue half-duplex
management in which each entity participates in turn. The videotex service
also calls for the exchange of typed data, of a limited size not subject to
alternate turns to speak. The other options offered by the BCS session subset
are not used.

- Presentation Layer

The main functions offered by the Architel presentation protoc'' a~ image
structuring, entry in the form mode, transmission optimization a: dynam-
ic rerouting of the presentation connection.

As far as image structuring is concerned, Architel introduces a document
structure that clearly identifies the objects handled, the relations exist-
ing between these objects and what operations are possible on these objects.
From the point of view of visualization, the document is written like a
sequence of pages (videotex screens). Each page consists of a series of
rectangular sub-images that can overlap and are called blocks. Rules of
composition define how the page image is obtained by assembling the blocks
which compose it.

The Architel protocols specifies how the document, page and block objects
are created; how they are selected for handling; how graphic or semi-graphic
characters coded according to recommendation S100 can be written into the
blocks.

Simultaneously with this visualization structure, Architel introduces a logic
document structure that makes it possible to handle all character strings
forming a semantic unit or field in a given application. The characters of
a field are automatically written in a series of blocks.

For the form-mode entry, the Architel presentation enables the server to
define an entry program which is remotely loaded, then executed by the access
point. This entry program, consisting of a sequence of sub-programs, spe-
cifies the role of the access point in the dialogue sequence with the user.

It thus makes it possible to relieve the server and improve the user's com-
fort through a finer tuning of the dialogue. Each sub-program indicates:

- the field to which the entry sub-program applies, i.e. the data structure that can be modified by the user;

- how to tell the user that he can act on this field;

- what checks should be made on the characters entered;

- how to visualize the characters entered by the user into the field;

- the user's maximum time of inactivity;

- what actions must be undertaken by the point of access when particular events occur, for instance the entry of a wrong character or the activation of a function key by the user. The actions that can thus be programmed are either local actions making it possible to display sub-images and/or link the entry with another sub-program, or communication actions that make it possible to archive the data being entered and specify the data to be transmitted to the server as a result of this entry.

Standard entry programs corresponding to typical dialogues are pre-stored at access points. They are directly accessible to all servers, and require no preliminary remote loading; to the user, they are a guarantee of dialogue standardization and stability.

Architel optimizes transmissions and generalizes the concept of default value: for each object managed by the presentation protocol, there is a default or model object which, for each parameter, defines the value that will be used when that parameter is lacking from the description of such an object.

Thus, to each data structure of the virtual terminal is associated a model structure defining the context of the presentation connection or active profile. Another profile specifies what operations are possible on these models, i.e: the range of values that can be attributed to a given parameter.

Using the models in conjunction with the working memory, which amounts to a library of protocol elements that can be remotely loaded and dynamically called upon, the Architel presentation makes it possible to minimize costs by avoiding multiple transmissions of recurring elements.

The last function offered by the Architel presentation protocol is the dynamic rerouting of the presentation connection. Under certain conditions, the server can require the access point to replace the presentation connection by a connection with another server, and the user does not have to be aware of it. The initial connection can be either freed, or merely suspended, in which case the access point will restore the previous context when the initial connection itself is restored. This may make it easier to manage an application distributed over several sites.

Architel and the Videotex Service Extensions

The Architel presentation protocol is structured so that, in the future, it will make possible the consistent integration of:

- new facilities, for instance the management of peripherals like memory card readers or printers (the CNET is now studying the inclusion of security features into Architel protocols, especially through the use of the microprocessor card, the so-called "memory card");

- new types of terminals, for instance alphaphotographic and alphageometric terminals.

Technical Lead and International Character

Through the services offered, the consistent framework provided, the technical lead and international character of the protocols used, the Architel communication architecture is a guarantee of the consistent and harmonious evolution of data-communication services and their compatibility with data processing and office automation. As Architel complies with international standards, data-processing equipment manufacturers will have an incentive to ensure, in the immediate future, the compatibility of their network architectures with Architel. In addition, the Administration, and especially the Directorate of Industrial and International Affairs are supporting the industry's efforts to adapt servers to Architel.

The international standardization work carried out by the CNET teams are complemented by a series of promotion and technical assistance efforts aimed at data-processing equipment manufacturers and future users: publication of protocol utilization specifications (STUR) that will be updated periodically, organization of technical training seminars, creation of tools to aid in development and conformity tests.

A series of technical assistance services will thus become available; in a first stage, they will be offered by the CNET.

Architel thus forms the foundation of the policy of opening and support to the development of the French data-communication industry which is carried out by the DGT to meet the users' expressed needs. In conclusion, Architel will return to users full control over the development of their data-processing systems.

Protocols

The Architel protocols are supported by the following technical choices:

- the physical layers (data link and network) communicate with one another through Transpac, in accordance with protocol X25,[2] levels 1, 2 and 3, as defined by the CCITT.

Transport is provided by the joint ISO-CCITT protocol.[3] In Architel, Class 0, the minimum end-to-end transport protocol forms the basic core, i.e. the minimum conformity class. To meet the needs of present data-communication services, Architel is also using Class 2, with multiplexing and flow control to make it possible to manage several communications simultaneously on a single virtual circuit.

APPLICATION
Virtual Terminal
"ISO-CCITT" Interactive and Document Transfer
"ISO-CCITT" Class 0 - Class 2
X25 Level 3
X25 Level 2
X25 Level 1

Figure 2

- the session protocol is a subset of the protocol recently adopted jointly by the ISO and the CCITT.[4] We should note that Architel contributed a lot to the success of this standardization, by actively participating in the work of the French Standardization Association, the ISO and the CCITT, in close co-operation with the DGT's major partners.

Existing data-communication services are using both the BCS (Basic Combined Subset) which offers simple dialogue management with no takeover possibilities, and the BAS (Basic Activity Subset) which manages dialogue with takeover possibilities and is well adapted to document transfer. The BAS subset is fully compatible with recommendation S62 previously issued by the CCITT for electronic mail.

- as for the presentation layer, standardization organizations have not yet completed their work on it.

Therefore, while having the benefit of prior and current work and integrating existing recommendations, Architel in this case is ahead of international standardization, as it defines a general virtual terminal service and protocol applicable to the various actual terminals (data-communication, data-processing and office automation terminals).

- As far as applications protocols are concerned, they are obviously specific to each application. For instance, Architel contributes to the preparation of message routing standards now being developed by CCITT and ISO.

The Architel Group

The definition of the Architel standards and their actual implementation in data-communication and data-processing installations are coordinated by an
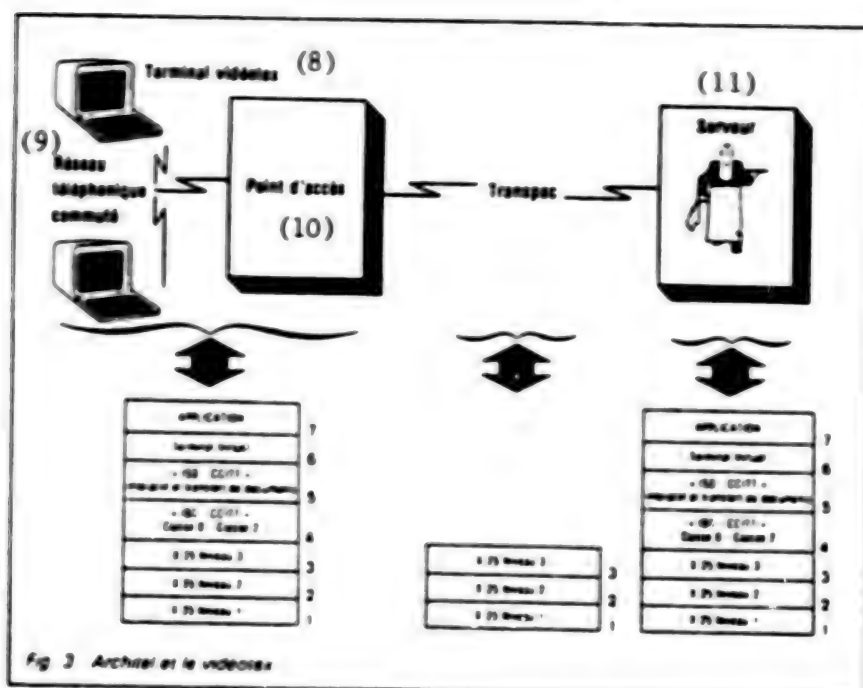
Figure 3 - Architel and Videotex

Key:

1. X25 Level 1
2. X25 Level 2
3. X25 Level 3
4. "ISO-CCITT" Class 0 - Class 2
5. "ISO-CCITT" Interactive and Document Transfer

6. Virtual Terminal
7. Application
8. Videotex Terminal
9. Switched Telephone Network
10. Access Point
11. Server

Architel Group created for that purpose within the DGT. The group is working in close collaboration with the other interested administrations, users and manufacturers.

To aid this group in its work, the CNET is more particularly in charge of:

- carrying out the necessary studies with respect to protocols and tests to ascertain the conformity of data-communication installations with Architel protocols;

- editing and updating protocol specifications;

- providing a technical link with interested manufacturers.

Following the completion of the initial work done by the Architel Group, which started early in 1983, the CNET just published user specifications for Architel

protocols, which are based on international OSI standards adopted jointly by the CCITT and the ISO. These specifications, which are intended for broad dissemination in the PTT Administration, in the industry (manufacturers and consulting companies) and among large users of data-communication services, can be obtained from:

CNET
General Administrative Means Division
PAA Center Technical Documentation Department
Attention: Mr Wyssmann
38-40, rue du General Leclerc
92131 Issy-Les-Moulineaux, France
Tel.: (1) 638.45.35

Terminal Management

As far as terminal management is concerned, the introduction of Architel reflects the overall evolution of teleprocessing networks during the past 10 years.

In the 1960's, terminals (T) were connected directly to server computers (S) through specialized links or through the switched telephone network, operating usually in the character mode (see Figure 4).
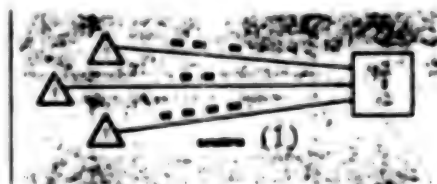

Figure 4

Key:

1. Characters

At present, the functions related to terminal management and to the management of elementary interactions with users are systematically transferred near the terminals, to concentrators (C) (or even to the terminals themselves) which communicate with servers through block-mode links (see Figure 5).
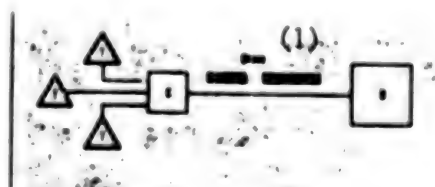

Figure 5

Key:

1. Blocks

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Such a function organization offers two types of advantages:

- the block-mode transmission makes it possible to improve the apparent connection quality through the use of transmission procedures. It also makes savings possible through the sharing of transmission supports (multipoint connections, packet switching);

- the transfer of functions near terminals makes it possible to improve the service offered to the user, through the use of a dedicated local computer (response time, availability). It also makes transmission savings possible as exchanges with the distant servers are reduced to a minimum.

When the Telecommunications Administration decided to install packet-switched networks in the early 1970's, its goal was to provide economic means for block transmission between computers. To "get back" to these networks the traffic from terminals operated in the character mode, the administrations also decided to add extremely simplified terminal concentrators, the PADs (Packet Assemblers-Disassemblers), to these packet-switched networks. These simplified concentrators fulfill the minimum of functions required to ensure that exchanges between character-mode terminals and distant servers take place in the block mode instead of the character mode. Therefore, the advantages of using PADs are: improved transmission quality and reduced transmission costs (local call plus use of Transpac instead of long-distance call on the general telephone network) and a broader range of servers that can be accessed faster. Yet, the rusticity of the PADs, in addition to the fact that it provides only a minimum number of advantages in this context, also imposes serious limitations when it comes to controlling accurately the server-user dialogue (lack of synchronization in exchanges). The PADs, therefore, are still a far cry from the present data-processing terminal concentrators.

With the introduction of Architel, users of data-communication terminals will be able to benefit from all the advantages mentioned above, as additional functions will be taken over by the access points, which will then fully play the role of terminal concentrators, as shown on Figure 5.

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BRIEFS

BIARRITZ VIDEOPHONES--The first 10 videophones (picture telephones) will be placed in service at subscribers' homes, and Biarritz hotels equipped with cable television will receive 2 new channels starting in March, it was announced on 1 March in Biarritz by the General Directorate of Telecommunications. The "fiber optic" operation carried out in Biarritz by the Directorate of Telecommunications is thus going from the experimental stage to the application stage: 1,500 volunteer subscribers will be equipped with videophones by the end of 1985, and Biarritz hotels with optic cable television will soon receive 2 new programs in addition to the 3 French, 2 Spanish, 2 Belgian and 1 Swiss channels they already receive. Biarritz will thus be the first town in France to receive "TV5"--a French-language selection offering programs from the A2 and TF1 channels and from the Belgian and Swiss televisions--and the English "Sky-Channel." In addition, the Directorate of Telecommunications indicated that the "TAT8" project connecting France and the United States by fiber optic telephone cables will be signed in June in Biarritz. The installation of this cable to replace older copper models will improve the quality of communications and the calling capacity between Europe and America. [Text] [Paris AFP SCIENCES in French 8 Mar 84 p 47] 9294

CSO: 5500/2624

SATELLITE INTERCEPTION CHANGING FACE OF TV VIEWING

Dublin IRISH INDEPENDENT in English 31 Jan 84 p 5

[Text] IRISH television experts have broken through another technological barrier to bring the choice of satellite TV into the country's living room.

Picking up TV signals from halfway across the world is no longer just a technological possibility. For Irish viewers it has become a reality.

And the cost of tuning into a whole new range of TV channels can work out even cheaper than an average hi-fi system or a good short-wave radio.

Forgetting about the finer points, it is possible to set everything into operations for as little as ₤250, according to some people in the communications industry.

The dishes which are capable of picking up satellite TV are on sale from a number of specialist electronic firms.

The basic cost of an adequate dish--akin to a high sophisticated TV antenna--runs from around ₤200 to up to ₤1,000, with ₤500 being an average for reasonably efficient equipment.

Once the dish is in place the user will need further specialist equipment to de-code the signals which it is receiving.

The decoders are also freely available. A crude D.J.Y. version will cost up to ₤200 while the more sophisticated ones can run up to ₤1,000.

Experts stress that this is the basic equipment and for high quality pictures more sophisticated electronics are required.

"Anyone can put up a dish in their back garden and pick up whatever satellites they happen to be pointing at.

"There are about four at the moment, including the Russian one and another, Skychannel, which came into the headlines in Britain the other week. There are others but they are of no real commercial interest," said Mr. John Moore-O'Connor of Dublin Cablesystems last night.

Mr Moore-O'Connor admitted that his company, which serves over 100,000 households in the greater Dublin region, had repeatedly approached the Department of Communications about entering the satellite era—at a much lower subscription to those linking up.

"People are quoting for dishes, in primary locations, figures as low as £250. Personally, I would have thought the lowest cost would be nearer £750, taking into account everything required.

"It can rise to anything like £5,000 to £10,000. There are a number of manufacturers offering the necessary equipment so it is freely available," he added.

But before satellite reception could be linked into a np kind of cable network the permission of the Department of Communications must be first be obtained.

At the moment a loosely structured, and somewhat informal, monitoring committee has been established under the auspices of RTE to monitor the possibility of granting franchises.

The arguments in favour of any cable television company, including RTE Relays, embarking on such a scheme would be the considerable cost savings.

The designated company could set up one large dish for each satellite which would receive a number of different channels from each. These would go into the cable system that already exists at no appreciable cost.

University College Cork and RTE in Dublin both have their own satellite reception networks. The national broadcasting station has permission to tap into the satellite which is jointly-owned by the European Broadcasting Organisation and is known as Ex-Tel.

Most dishes required would be in the 2-3 metre diameter range. But if the satellite is closer to the horizon then a much larger dish is necessary, and so on. Once the direction of the dish is set it does not change.

When the BBC service begins operating most homes in Ireland, and particularly on the east coast, will be in the "footprint" of the beam.

This footprint is the primary beam from the satellite transposers which are basically sitting in the sky. At these satellites will be well above the horizon there should be none of the inequality which people living in mountainous areas have complained of to date.

The big question will be whether RTE will follow in the "footprints" of their rival across the water. Of course, it has to be asked—will the programmes be any better?

For twelve years Cork campaigned for a multi-channel television service but last night they went one better than the six cable channels when the first transmission into this country of the new Sky Channel was shown in the city. Sky Channel is beamed 22,000 miles out of a satellite in space and then back again to its European audience. It will be a prominent feature of Cork viewing as soon as the Government grants the licence.

IRELAND, UK CONSIDER SHARING TELEVISION SATELLITE

Dublin IRISH INDEPENDENT in English 20 Feb 84 pp 1, 20

[Article by Bernard Purcell]

[Text] THE Irish government has been approached about sharing the cost of
a TV satellite with Britain.

The proposal arose because the B.B.C., I.B.A., and I.T.V. networks have
realised that it would be far cheaper to put their own satellite in the sky
than to have to lease channels on someone else's.

The cost would have to be shared with the Irish, who were allocated the same
airspace--31 degrees west--as the British, Spanish, Portuguese and Icelanders
by the World Administrative Radio conference in 1977.

The British television organisations had considered using space channels on
the Unisat satellite--owned by a consortium of British Telecon, G.E.C.-
Marconi and British Aerospace--but that appears now to be for more expen-
sive than had been forecast.

Meanwhile, a major conference of Irish and British television executives will
take place in Dublin on March 6. The conference is a technical meeting. Any
final decision on whether or not to go ahead with the satellite proposal would
have to be made at government level.

The Irish Government is understood to have been given a deadline of February
29 to express its views on the venture.

Enthusiasm

But Communications Minister Jim Mitchell has shown great enthusiasm for this
breakthrough in broadcasting. The Government has already decided to go ahead
with the development of satellite TV "in principle."

Their decision follows an inter-departmental report chaired by Ms. Ita Meehan,
deputy secretary at the Department of Posts and Telegraphs, before Christmas.
It led to the formation of a Cable Services monitoring committee, chaired by
Margaret Downes.

That committee, which includes the Professor of Microelectronics and Engineering at University College, Cork Dr. Michael Sexton, has invited numerous tenders from interested consortia.

The details have not been revealed by Mr. Mitchell, but it is understood that RTE will play a significant role, so it is quite possible that they may be given approval to divide the cost of a satellite.

The reason why the British have approached the Irish is the cost. Under the original proposals, the BBC would have to pay b350m. over seven years for Unisat, which would require extensive capital borrowing.

The rental cost had been estimated at about b12 m. a year and that came down to b9 m. for the two channels the BBC would use. It still compared unfavourably with figures like b5 m., quoted by other suppliers.

Franchise

Other alternative measures were considered. The ITV companies were approached by the British Department of Trade and Industry about sharing the cost. But they wanted their franchise to be extended beyond the current 1989 expiry date, in exchange.

Mr. Mitchell who has been in Cork over the weekend has expressed his desire to make Cork the country's international communications centre. A b7m. satellite earth station is under construction in Midleton.

Mr. Mitchell will have to consider the effect which his decision will have on existing cable networks, including RTE Relays. If the new satellite does not go ahead, the cable companies can put their own dishes up to receive from three 'birds' already in the sky.

An individual can put up a dish already in their back garden for a few hundred pounds and, with a decoding device, can pick up stations as far afield as Moscow. It is this ease of free reception that may prove to be a headache.

If RTE, BBC, ITV and IBA controlled their own satellite, they could determine precisely what signalling code would be transmitted and then sell the "key" which would make sense of the transmissions.

EEC REPORT QUESTIONS IRISH-SWEDISH TELECOMMUNICATIONS DEAL

Dublin IRISH INDEPENDENT in English 6 Jan 84 p 3

[Article by Gerry Mulligan]

[Excerpt] THE CONTRACT for the supply of telecommunications equipment to the Irish Republic from the giant Swedish company, Ericsson, has been severely criticised by the authors of the E.E.C. financial report for 1982.

The contract was agreed in 1972 and renewed in 1977--but prices were fixed at the exchange rate which applied between the Swedish and Irish currencies in 1972. The Irish pound fell sharply against the Swedish Krona in recent years, with the result that some charges were increased by up to 50 p.c. on the basic price.

A large proportion of aid for Ireland from the E.E.C. Regional Fund--worth more than b64m. in 1982--has been spent on improving the telecommunications service, the Luxembourg-based Court of Auditors emphasised in their report, released yesterday.

The report claims the deal with the Swedish firm places "onerous financing terms" on the Common Market coffers.

The price difference clause in the contract for some items of equipment allow for 37.5 p.c. towards covering the increase in manpower in Ireland and the report points out.

'It may be questioned whether it was reasonable for the community to assume responsibility for the financial consequences of clauses as onerous as those "the report emphasises.

The Irish Government did not invite tenders prior to the conclusion of the initial contract, or its subsequent renewal with the non-E.E.C. firm, the auditors stress in a footnote.

Apart from certain 'exceptional cases,' the supply and installation of telecommunications equipment in Ireland is governmmed by this contract, the report says.

The E.E.C. Commission, replying to the criticisms of the court of auditors, stress that the contract was based on 1972, before Ireland joined the Common Market.

The Irish Government 'presumably negotiated the best terms possible" the E.E.C. Commission says and adds that the inclusion of the exchange rate guarantee for the Swedish firm is a commercial matter for the responsibility of the Republic's administration.

CSO. 3500/7516

TELECOMMUNICATIONS AGENCY OFFICIAL ON MARKET OUTLOOK

Oslo AFTENPOSTEN in Norwegian 22 Mar 84 p 35

[Article by Ulf Peter Hellström: "Computer and Telecommunications Market to Double in Two Years"]

[Text] Bolkesjø, 21 March. The Norwegian market for industrial internal communications last year reached total sales of 2.5 to 3 billion kroner. This was reported by the Telecommunications Agency's Industrial Internal Communications (TBK) Division's Chief Inspector Jan H. Gunnarsen during the Telecommunications Agency's press conference on Wednesday. He presented a forecast which shows that the total market for information equipment in Norway will be about 5 billion kroner in 1986.

TBK is a project which the Telecommunications Agency has started in order to make more efficient and coordinate activities in the industrial internal communications market, which encompasses all telecommunications and data processing equipment for voice, data, text and pictures for private and public customers. According to Gunnarsen, the biggest supplier in this market is IBM, which has a market share of 35 percent. In second place comes the Telecommunications Agency which with its sales has a share of 15 percent. In 1983 IBM increased its sales in this market by a good 40 percent. Part of this increase is due to increased sales of various types of purely data processing equipment. On its part, the Telecommunications Agency increased by only 10 percent. The service supplies mainly interoffice exchanges and individual types of terminals, such as telephones, Telex and Telefax equipment.

In order to integrate the various information systems within a concern it is necessary to standardize communication between the systems. "In order to ensure business customers both integration and freedom of choice, market participants must be found which are big enough to set practical standards. This has the result that smaller participants in the market will supply equipment which is compatible with communications systems for the big suppliers. It is necessary that there be at least two market participants in order that the customer will be ensured freedom of choice. In Norway, IBM and the Telecommunications Agency have up to now had such a role as practical standard setters," Gunnarsen pointed out. He believed it to be most profitable for concerns that the Telecommunications Agency continue to get to participate in

the competition in this field. Otherwise industry will be dependent on a dominating supplier, the TBK representative believed.

The market for industrial internal communications equipment will double in the course of two to three years. According to Gunnarsen, "pure" computers will represent 1.96 billion of total sales of 5 billion in Norway in 1986. Terminals and communications-oriented computers will constitute 1.6 billion, interoffice exchanges 220 million, local network equipment 16 million and telephones 65 million.

Gunnarsen also went into the activities of TBK, which will continue as a project until the political authorities have discussed the telematics report and the Stette Committee's recommendation regarding the Telecommunications Agency's organization. This recommendation is to appear in June, and the Storting will discuss the Telecommunications Agency's scope stipulations no sooner than next year.

The TBK project's main job is to unite functions for marketing, installation and service centrally and in tel :o nunications areas. About 1000 employees at the Telecommunications Agency /e now been channeled into TBK, which will represent about 10 percent, or million kroner, of the service's combined operations this year.

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CSO: 5500/2622

TELETTRA ADVANCES IN HIGH TECHNOLOGY ELECTRONICS FIELD

Oslo AFTENPOSTEN in Norwegian 22 Mar 84 p 33

[Article by Kjell Aaserud: "Halden Undeservedly Unexplored: Telettra
Advances in High Technology"]

[Text] "We do not have quite so bleak a view of the future employment situa-
tion in the Halden area now as some time back. We have been undeservedly un-
explored as far as everything positive we have to offer is concerned, but
things indicate that this can now be changed," Halden's Mayor John Erik
Eriksen and the city's Deputy Mayor Oddvar Jacobsen say.

They receive prompt support from Administrative Director Pål Sorensen of
Telettra Norge [Norway], which has had a rapid but healthy expansion after the
firm came to Halden: There is much positive in this. Not least, it has
proven profitable to be able to work in an old industrial area like Halden.
"We would not have achieved the same results if we had to work at a place
without industrial traditions. One soon discovers that the situation is
different if one looks at possibilities and not just at problems," Sørensen
says.

On Wednesday Telettra Norge signed a 12-million-kroner contract with the
Telecommunications Agency, represented by Section Chief Kjell Arvidsen. The
order includes high-capacity digital radio links for the long-distance network
which is to be used for linking the recently ordered digital telephone ex-
changes. But this is far from the first contract Telettra has had with the
Telecommunications Agency. The firm is, according to Arvidsen, one of the big
suppliers in the group under STK [expansion unknown] and EB [Elektronisk
Bureau (Electronics Bureau)].

Fine Development

Telettra Norge, which is 51-percent owned by Norwegian private individuals,
and the rest by Italian Telettra International, is under the circumstances a
new firm. It started up in 1978 with the development of production in Halden
and its central administration in Oslo. According to Director Sørensen it is
Norway's largest producer of carrier frequency equipment. Its growth has
been formidable. If one is to judge by the results, earnings are also on
target. From sales of 97 million kroner last year (a 31-percent increase)

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they came out with a result after yearly adjustment measures (before taxes) of 5.6 million kroner, which represented a doubling from 1982. In 1983 exports also amounted to close to 6 million kroner, versus zero in 1982. At the turn of the year 85 people were working at the concern.

Telettra is what is characterized as a high-technology industry. About two percent of its employees work on research and development and this part of operations will now be expanded with a view toward adopting more products. It says something regarding development that the order reserve has increased from 105 million kroner at the turn of the year to 128 million kroner today. Sales of 110 million kroner are estimated for the current year.

The predominant share of Telettra's production goes to the Telecommunications Agency, which according to Director Sørensen has top expertise in its fields. Products are being developed in cooperation with the Telecommunications Agency's experts. But international ties are also necessary. The concern has these via Telettra International, which is the world's next largest exporter of transmission equipment with factories in a number of countries.

Products for the Future

"With this contract Telettra Norge received, it is 'walking right into the future,'" Telecommunications Agency Section Chief Kjell Arvidsen believed, who emphasized the significance of the fact that the contract is associated with digital exchanges. Telettra got the contract in an international competition. Almost as a curiosity, it can be mentioned that the contract amount was in Italian lire and equaled 2.8 billion. The concern earlier got a 25.7-million-kroner contract with the Telecommunications Agency for carrier frequency equipment. Now it is negotiating an additional 16-million-kroner contract. Arvidsen emphasized the significance of the fact that a Norwegian firm possesses the system expertise and service equipment. The Telecommunications Agency is a major consumer of equipment. Last year 2.2 billion kroner worth was bought, 68 percent of it from Norwegian suppliers.

Editor Arvid Johanson, who is the chairman of the board of Telettra, took perhaps greatest pleasure in the concern's development in behalf of Halden, while Mayor John Erik Eriksen said that he was so impressed that he estimated that the city would place larger and larger demands on the firm and looked forward to the time to come with anticipation, especially because it is working in a field which is under development.

Telettra is a shoot of an industrial stem which Halden's mayor and deputy mayor hope will develop. The city has a totally different industrial structure today than 10 to 20 years ago. Then a third of the jobs--2000 people-- were in textiles, shoes and briefcases. Now there are just bits and pieces of this left. They managed to compensate partly via new businesses in the form of 14 to 15 firms with a total of 900 employees. But too little has happened since Saugbrugs had to cut back at the end of the 70's. By the end of January this year there were about 1000 registered unemployed, or almost nine percent of those actively seeking work. The figure is a little lower

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now, but the unemployment figure is in reality far higher than registered, because it is a question of longterm unemployment.

Capacity for Everything

"We must not forget that the restructuring which has taken place in Halden's industry is future-directed," Mayor John Erik Eriksen and Deputy Mayor Oddvar Jacobsen stress. "But we are still able to accept anything. We have vacant industrial buildings, we have housing and construction space and not least we have very good manpower."

Eriksen and Jacobsen say that Halden is in the process of getting what they characterize as the environment of the future with a foothold in electronic data processing and high technology. Østfold District Technical School in the city is educating 40 to 50 EDP specialists a year in addition to the approximately 100 who are in the field from before. Neither the mayor nor deputy mayor regard it as profitable for experts in the high technology field to be "exported" to Oslo, for example. Leading Norwegian computer firms are developing projects in cooperation with Østfold District Technical School. Halden's leadership therefore hopes that the expression "undeservedly unexplored" will not be able to be used much longer.

8985
CSO: 5500/2622

ERICSSON BACKGROUND, HISTORY, CURRENT DIRECTIONS PROFILED

Stockholm NY TEKNIK in Swedish 26 Jan 84 p 57

[Article by Erik Mellgren: "Ericsson Has the Key"]

> [Text] A dramatic change is taking place in the Swedish
> electronics industry. Ericsson is an example of this. The
> old telephone company is in the process of changing into a
> telematics group. Telecommunications technology and computer
> technology are merging. Ericsson's pattern is a model for
> the rest of binary Sweden as well.

Most everything depends on Ericsson. The future of the group is decisive for
the future of the entire Swedish electronics industry. The group is
responsible for about half of the Swedish electronics production and for
considerably more of applied research and development.

The company has a unique foundation of technical knowledge and resources,
which also benefit other portions of industry.

Ericsson's success at the end of the 1970's and the beginning of the 1980's
was largely based on the AXE telephone station system.

The export successes of the AXE exchanges made it possible to transform the
L. M. Ericsson Telephone Company from a predominantly electromechanical
industry into an advanced electronics company over a period of a few years.
AXE is still successful in the telecommunications market.

But Ericsson is now squarely in the middle of another change. The telephone
company is also becoming a computer firm, a telematics concern.

The first AXE exchange was inaugurated in Sodertalje in March 1976. It was
the result of a close cooperation between Ericsson and the Telecommunications
Agency. The two organizations had previously met with great difficulties in
developing computer-controlled exchanges.

The Telecommunications Agency and Ericsson jointly laid down the
specifications for the new exchanges, and formed the jointly owned development
company Ellemtel.

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Ellemtel's office buildings sit there in rows of yellow sheetmetal next to the Alvsjo commuter train station. The company's personnel was recruited from both the Telecommunications Agency and from Ericsson. Goran Hemdahl is one of the people at the core of the development work.

He picked up on and continued to develop an idea born by Ericsson technician Ivar Jacobsson while working on a previously computer-controlled exchange: functional modularity.

Toward New Heights

This means that the structure of the telephone station is defined as a number of blocks. The way the blocks communicate with each other is strictly defined. But the internal appearance of each block, both as regards software and hardware, may vary. This makes it possible to change the structure and function of individual blocks without having to change the remainder of the system structure.

Functional modularity has been one of Ericsson's heaviest technical arguments. It has enabled a gradual modernization of the AXE system. Today's exchanges are based on entirely new components in comparison with the 1977 model.

The AXE system was completed a few years after the competitors' first computer-controlled local telephone stations. This was the price for Ericsson's--and the Telecommunications Agency's--efforts in a totally new system structure.

It turned out that the development played into Ericsson's hands. The 1974 oil crisis caused many telephone administrations to postpone their investment decisions. The telecommunications market got underway just as the first AXE station went into operation.

The Australian telecommunications administration chose AXE in a much-noted system choice, that is to say a decision about which manufacturer's technology to use for the upcoming expansion of the network.

On Lucia Day in 1977 Ericsson received the major order from Saudi Arabia, a project in which Ericsson's share amounts to several billions.

Today there are AXE systems in various versions in 48 nations, in some instances manufactured on license.

Since the introduction of AXE, Ericsson's share of the world market for telephone stations has grown from 10 to 13 percent. No other system has been able to touch AXE's successes outside the protected domestic markets.

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The Major Conversion

The AXE success came at the same time as demand for the previously conventional electromechanical telephone sations ceased overnight.

Production was converted over a few years at the end of the 1970 s, a conversion which also implied that the personnel was cut back and factories shut down.

The development of microelectronics, in which increasingly more functions are contained in a single circuit, has forced Ericsson to invest in its own manufacture of integrated circuits at Rifa.

Placing the development of components, which in themselves possess the essential functions of an AXE exchange, with independent semiconductor firms, means taking the risk of an involuntary "transfer of knowledge."

Company-own manufacture insures better secrecy--and in addition a better negotiating position for negotiations with other circuit manufacturers.

At the same time there has been discussion within Ericsson s leadership that instead of going with Rifa one should buy an already established U. S. semiconductor company.

According to officials at the National Board for Technical Development, STU, this is part of the background for the direct industrial support of the national microelectronics program.

In connection with the national microelectronics program, portions of Ericsson s system for computer-supported construction and manufacture of integrated circuits will also become accessible to the rest of industry.

Into the Computer Jungle

Up to now Ericsson's activity was totally dominated by public communications systems. But today information systems are the most rapidly growing business area of the group.

In 1981 Ericsson purchased semi-state-owned Datasaab. It had to change its name to Ericsson Information Systems. Today it sells telephone sets, private branch exchanges, modems, monitor screens, minicomputers etc.

But the computer market is considerably more scattered than the telecommunications market. Here there are many small customers in each country, but not a single telecommunications administration.

The customers choice is less a matter of technical considerations and more a matter of feeling confidence in the supplier. The competitors are more numerous and the battle for the shares more intense.

To Ericsson this meant that the company's "culture" had to change. It was a necessity which in part caused Ericsson Information Systems to become an independent subsidiary, not a division of the Telephone Company.

That change has not been with problems. The Ericsson group has continued to maintain its traditional "low profile" in markets where it is a vital necessity to be seen and heard.

On the part of the company there has been emphasis on its ability to offer complete solutions to the companies' needs for information systems, and at times one has more or less refrained from "selling gadgets."

But in the last year selling gadgets has also been recognized as equal to system sales, something which was further underlined by the purchase of Facit, whose products have traditionally been simpler than the ones Ericsson acquired by buying Datasaab.

The two most important products of Ericsson Information Systems are the Alfaskop monitor and the digital private branch exchange MD 110.

Alfaskop, once developed by semi-state-owned Stansaab, is Sweden's most successful computer product by far. It has become the epitome of good economy, not only in Sweden but in the larger part of Europe.

MD 110 is a digital private branch exchange which utilizes much of the experience from the AXE development. As early as 1977 Goran Hemdahl predicted among other things that Ericsson would make use of that effort in other areas as well.

MD 110 can be used as the core of local computer networks--which may also include several interacting exchanges.

The greatest success so far for MD 110 has been in the United States, where a contract has been signed with Honeywell: Honeywell is to sell MD 110 under its own name as part of the company's system for construction automation.

The agreement gives Ericsson a direct channel to an established group of customers. Honeywell will also cooperate with Ericsson in a newly formed development company for adapting the exchange for the U. S. market.

Furthermore, the U. S. company Ericsson Inc. is to sell the exchange under its own management.

Small but Fast

In Europe Ericsson Information Systems was the most rapidly growing computer company in 1982, according to the prestigious magazine DATAMATION. In the United States, where its effort takes place via Ericsson Inc., half of which is owned by the Atlantic Richfield oil company, DATAMATION ranks it as number 47 in size.

But at the same time Ericsson s low profile has had the result that its ability to achieve a breakthrough in the United States and its reputation in the market have not turned out as expected.

In DATAMATIC s comment on Ericsson's 47th place, for instance, it takes note of only one order for a largely unsuccessful U. S.-developed word processing terminal.

The Ericsson leadership is now spending large sums on marketing and 'confidence-inspiring measures" in the United States.

It is important for Ericsson to grow and grow fast in the area of information systems. This has been emphasized many times by Hakan Ledin, among others, who is now the one ultimately responsible for the U. S. activity.

A reasonable evaluation is that in order for Ericsson to become a significant supplier of information systems in a few years, it must establish itself as one of the five largest companies in Europe and at least among the 10-15 largest in the United States.

Besides ordinary telephone stations and information systems, mobile telephones have become a successful new product. Even today the Nordic mobile telephone network, for which Ericsson is a main supplier, has begun to reach its capacity, so that it has to be expanded.

From England Ericsson has received an order for the same system as in the United States. The major competitor in this field is Motorola. Ericsson s great asset is totally superior experience of systems in operation.

The mobile telephone system also utilizes AxE technology for telephone connection.

Development Clearly Discernible

The telematics development is clearly reflected in the company. Today the Ericsson group has Sweden s perhaps largest combined computer resources. The number of terminals per employee next year is to be one for every two officeemployees.

In the Stockholm area Ericsson is now constructing a powerful internal network for telephone and transmission of data and text by means of MD 110 and other Ericsson products.

Constructions undertaken with the aid of computers are stored in data bases and are used directly for guiding production equipment. From Stockholm the software and documentation are sent out via the telephone network to the factories.

The future of the Ericsson group will largely be determined by the future of the Swedish electronics industry. It is no accident that Ericsson companies have repeatedly appeared in the history of binary Sweden.

One may perhaps be justified in stating that much of what we cannot find today in the Ericsson group we will meet tomorrow in the rest of binary Sweden, in companies, schools, organizations and government agencies, perhaps also in the homes. It is a highly technological future, where electronics, tele-communications technology and computer technology together will determine many of our living conditions.

SATELLITE BROADCAST SYSTEM CHOSEN; COST SHARE UNSETTLED

Government Action

London THE DAILY TELEGRAPH in English 20 Jan 84 p 17

[Article by Robert Stringer]

[Text] The Government yesterday opened the way for the development of Direct Broadcasting by Satellite.

In a Commons reply, Mr Brittan, Home Secretary, confirmed the adoption of the C-MAC colour picture transmission system developed by the Independent Broadcasting Authority and announced that the French packet sound transmission system had been selected alongside it.

The Government hopes that this system will become the European satellite standard and, Mr Brittan said in his reply, there were strong grounds for believing so.

The decision was welcomed by the BBC and the IBA who are now locked with the independent television companies in discussing a BBC proposal to share the :350 million cost of putting the first DBS system into operation.

The BBC had originally intended to launch Britain's first DBS system with two channels on its own in 1986, but the high cost and doubts over the economic viability of the operation have forced it to suggest partnership with its ITV rivals.

Payment Issue

London THE DAILY TELEGRAPH in English 25 Jan 84 p 12

[Article by Robert Stringer]

[Text] The BBC is to go ahead with direct broadcasting by satellite (DBS) even if its present plan to share the cost of the project with ITV collapses.

This commitment was made yesterday by Mr Stuart Young, the BBC's chairman, as the discussions continue between the Corporation, the Independent Broadcasting Authority, the ITV companies and Government.

"If the talks are not successful the BBC will time its entry into DBS to ensure that there is no loss to the licencepayer," Mr Young told the Broadcasting Press Guild.

"I believe that we in this country have to go into DBS, that it should be a British effort and should be controlled by British companies."

He hoped for the sake of his successor that the partnership with the commercial sector was successful because the new technology was very expensive and fraught with difficulties.

. 500 Conversion

The aim was to produce satellite services at a price the public could afford and to expand as the cost of the technology dropped.

Mr Young put the cost to the individual of the conversion necessary to receive satellite signals on a television set at :500 or ∖16 a month to rent.

As market research had suggested that the most anyone would pay for a satellite service was 20 a month, this left only a theoretical .4 a month for programmes which was quite inadequate.

Rented costs could be spread over 30 months instead of the existing 22 months and Government could offer tax incentives to manufacturers of equipment.

As satellite television would be a "slow-builder" with only 200,000 subscribers expected in the first two years, industry had not exactly been "jumping with joy" to manufacture conversion kits.

CSO: 5500/7515

BRIEFS

VIDEO LINK WITH CANADA--British Telecom broke new ground yesterday in providing international conference links by satellite with the beginning of the first digital colour video service with Canada, allowing businessmen in each country to talk and listen to each other. Later in the year, British Telecom expects to set up a similar service for the United States. [Text] [London THE DAILY TELEGRAPH in English 8 Feb 84 p 1]

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